THE EFFECTS OF IT OUTSOURCING ON IT PERFORMANCE AND CLIENT SATISFACTION:

A Quasi-Experimental Longitudinal Study in a large pharmaceutical organization

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…Live Life to the Fullest!

Emile van der Linden, Oct 15th, 2018

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LIST OF ABBREVIATIONS

AT	-	Agency Theory
BIA	-	Business and IT Alignment
BIAG	-	Business and IT Alignment Gap
BPO	-	Business Process Outsourcing
BU	-	Business Unit
CEO	-	Chief Executive Officer
GT	-	Gaming Theory
TCE	-	Transaction Cost Economics
IT	-	Information Technology
ITO	-	IT Outsourcing
IS	-	Information Strategy
NEG	-	Non- Equivalent Group
NEGD	-	Non- Equivalent Group Design
RBV	-	Resource Based View

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ABSTRACT

Despite twenty-five years of cumulative research on Business & IT alignment (BIA) and experience on IT Outsourcing (ITO), being able to effectively leverage IT to achieve business value has consistently been the number one priority for CEO's over the past twenty-five years, suggesting that achieving alignment in ITO is a puzzle that is yet to be solved. This thesis aims to provide a deeper understanding of the development of business & IT alignment in ITO, by studying the inter-organizational relational interaction between clients and IT suppliers on a business unit level. The hypothesis that ITO has a negative effect on BIA was adopted from Derksen (2013) and tested in a new setting.

Based on an extensive literature review, hypotheses were defined about how ITO is expected to effect proxies of BIA. The proxies used were Client Satisfaction and IT Performance. These dependent variables were studied looking for immediate and long-term effects, to test if and how the relational interaction develops during and after outsourcing IT services. To study the possibly reciprocal effect of IT performance on client satisfaction and understand how these responses may be culturally biased, the relation between the dependent variables was analyzed separately. These interaction effects were studied in a quasi-experimental setting based longitudinal data collected from a large multinational that has gone through the process of IT outsourcing in 2016. The collected data existed of subjective and objective measures of BIA from prior to-, during and after the event of outsourcing.

The findings in this study support the main hypothesis that ITO has a negative effect on the level BIA. Results show a significant impact of outsourcing on both short- and long-term client satisfaction and IT performance. The client satisfaction and IT performance significantly decreased from the pre-outsourcing phase to the peri- and post-outsourcing phase. The long-term effects showed a significant recovery, yet remained significantly lower than the pre-outsourcing levels of IT performance and client satisfaction. The hypothesis that the effects of ITO on the relational interaction should reduce over time was also support by the findings from this study. Results showed that that there was a significant improvement of the client satisfaction and IT performance between the transitioning phase and the post hoc situation. Differences in performance and satisfaction over time were to a large extend explained by the type of services and the differences between business units, rather than the provider of the IT services.

The most unexpected finding from this quasi-experiment was the fact that the performance of and satisfaction about the retained IT organization was impacted more significant by the outsourcing of IT, than the outsourced services. These effects were later explained by IT and business unit leadership as the unforeseen result of centralization and reorganization that was implemented in parallel to the event outsourcing and the fact that the on-site and inhouse IT staff possible provided more 'services' to the local business units than the services that were contracted and outsourced.

The new insights derived from this study fuel a good discussion on the function of IT for a business unit, but also what role is assigned to the clients and the firm's supplier management. In addition, various interesting leads are provided for future research and improvement of alignment processes for the studied organization.

Keywords: IT Outsourcing, Business and IT Alignment, Relational Maturity, IT performance, Client Satisfaction, Cultural Bias

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1. INTRODUCTION

This introduction will briefly describe the motivation for this exploratory study into the effects of IT outsourcing on business and IT alignment in large firms. Subsequently it will elaborate on the thesis objective and approach, before presenting the outline of this thesis and continuing with an extensive literature review providing the theoretical background of this study and explaining the main constructs involved in the interorganizational service exchange in ITO.

1.1. IT OUTSOURCING - A PUZZLE YET TO BE SOLVED

Strongly driven by market trends, globalization and accelerated transcendence of competitive advantage (McGrath, 2013), Business Process Outsourcing (BPO) has become a standard practice that allows a firm to focus on its core activities, while reducing transaction cost and risks. In particular, outsourcing tasks related to Information Technology (IT) has become the modus operandi for large firms (Lepeak, 2017) .

IT Outsourcing(ITO) can be defined as the process in which an organization contracts-out its IT assets, people and/or activities to a third-party, in exchange of managed assets and services (Loh & Venkatraman, 1992). Whether IT assets, people and activities should be considered part of a firm's core activities or not can be disputed. Other forms of BPO typically focus on specific tasks that can easily be transferred, but IT drives the way companies organize their business processes, deliver their services and communicate with customers (Avolio, Kahai, & Dodge, 2000). Eventually, the decision for a firm to engage in outsourcing remains a strategic one, aimed at improved business performance by enhancing the alignment between the firm's objectives and that of the business function being outsourced (van der Valk & van Weele, 2011).

According to Henderson and Venkatraman (1993), economic performance is directly related to the ability of a firm to create strategic fit between its position and the design of the IT function. These claims have received much support by later studies that demonstrate how successful alignment of Business and IT is a predictor of superior business performance (Schlosser, Weitzel, Wagner, & Beimborn, 2010), could create competitive advantage (Luftman, Rigoni, Dorociak, & Kempaiah, 2008) and increase an organization's profit margin and growth (Byrd, Lewis, & Bryan, 2006). As a result, the concept of Business and IT alignment (BIA) has received much attention from scholars.

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ITO is a response to a natural gap that exists between the business' needs and the capability of the IT organization to support this. Firms are focused on growth and are constantly aiming to improve on strategic targets such as operational excellence, customer intimacy or best available product (Lacity, Khan, & Willcocks, 2009). The IT organization is expected to support this urge to compete but is not without bottlenecks of its own. As a result, the business becomes unsatisfied about the performance of IT, up to the point it chooses outsourcing to be the better option (Derksen, 2013). This gap between Business and IT, illustrated in Figure 1**Error! Reference source not found.**, is commonly referred to as the Business and IT Alignment Gap (BIAG).
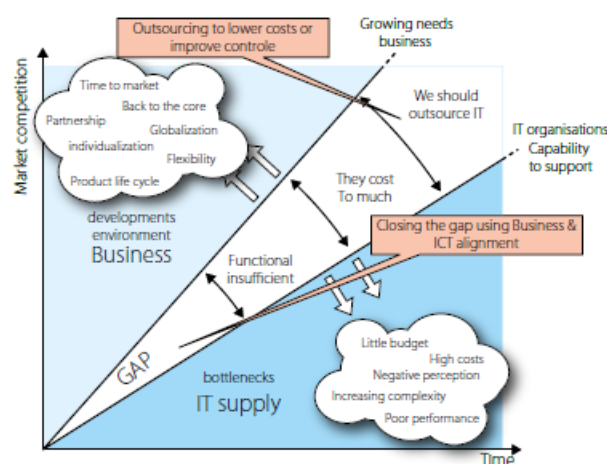
Figure 1 - Business & IT Alignment Gap (Dereksen,2013)

Outsourcing the IT supply-, or even delivery function, reduces the BIAG by taking away some of the bottlenecks, but in parallel introduces new challenges. For example, managing the complex buyer-supplier relationships involved in the successful delivery of the outsourced services, or the loss of trust and implicit knowledge embedded in the relationships between the business and local IT (Beulen, 2011). These challenges may in turn have a negative impact on the level of BIA (Derksen, 2013).

In literature, an increased number of studies on ITO has been calling for Just Right (Aron, Clemons, & Reddi, 2005), or selective outsourcing of IT tasks (Curry & Willcocks, 1998), rather than total outsourcing of the IT processes. Findings from these studies reveal a strong correlation between the level of complexity and uncertainty of tasks and the performance of ITO. This is one of the reasons why outsourcing contracts often include taking over some of the buyer's employees (Curry & Willcocks, 1998). These experiences from cases and the knowledge derived from recent studies on ITO, has led to investing in retained IT organizations and

more selective outsourcing. As a result, coordination costs of outsourcing have increased, while Total Cost of Ownership(TCO) was reduced due to improved performance and predictability of cost (Beulen, 2011).

While cost savings remain the main driver for ITO (Derksen & Luftman, 2016), in practice ITO success is far from being self-evident. Industry research conducted by Deloitte (2016) shows that less than 50% of large ITO deals are successful in delivering the targeted benefits. And while 80% of firms remain positive about the concept of outsourcing IT components (Deloitte Touche Tohmatsu, 2016), 75% of ITO contracts is renegotiated, transferred to a new supplier or ceased and performed back in-house within two years after contracting (Hefley & Loesche, 2009).

While alignment usually seems to be present between buyer and supplier on a strategic level, firms struggle to achieve alignment on the operational levels of the interorganizational service exchange (Schlosser, Weitzel, Wagner, & Beimborn, 2010), as they fail to effectively organize the transactions and/or relations involved in sourcing the IT services (van der Valk & Rozemeijer, 2009).

Despite twenty-five years of cumulative research on Business & IT alignment and experience on ITO, being able to effectively leverage IT to achieve business value has consistently been the number one priority for CEO's over the past twenty-five years (Forni & van der Meulen, 2017), suggesting that achieving alignment in ITO is a puzzle that is yet to be solved...

1.2.   THESIS OBJECTIVE

Based on extensive literature review performed as part of the design phase of this study, there appears to be a broad consensus about the necessity for IT to be aligned with the business, to allow IT Outsourcing to be successful. The process of BIA is essential to drive business results and satisfaction about the delivery of IT services (Hunter, Nunno, Meehan, McMullen, & McDonald, 2012). When IT strategy is not properly aligned with business strategy, neither is the outsourced delivery of services. Therefore, I propose that if outsourcing is to have a negative effect on Business and IT alignment, this should be reflected in the satisfaction about the ability of IT to meet the business' needs.

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So far, the fields of ITO and BIA have been studied fairly independent from each other. Previous studies on ITO have looked at the interorganizational service exchange as a process between buyer and supplier, while studies on BIA have focused on the relational interaction between business and IT. Only recently, scholars have begun showing interest in the relation between the level of BIA and ITO performance in organizations. Studies have been showing mixed results. A study by Schlosser, Weitzel, Wagner & Beimborn (2010), using data from 154 firms, concluded that ITO is likely to have a negative impact on the level of BIA within a firm and, vice versa, low levels of BIA are likely to have a negative impact on ITO performance. A more recent and extensive study into the relation between ITO and BIA was performed by Derksen (2013), who was unable to find evidence in his distortion to accept the hypothesis that ITO has a negative impact on BIA. Somewhat inconclusive, his main recommendations for further research were to study the **relational** and **cultural** contingency factors in achieving BIA **in various stages** of the ITO relationship.

This thesis seeks to build on these previous studies by adding another piece to the puzzle called ITO. The hypothesis by Derksen (2013), stating that ITO has a negative impact on BIA, is adopted and shall be tested in a longitudinal setting with the objective to develop a more in depth understanding about how the concepts of ITO and BIA relate and affect the inter-organizational service exchange over time.

To achieve this objective, this study focusses on the development of the relational interaction between business and IT suppliers in large firms. Studying these interactions at a country or business unit level will allow a more holistic view on the process of business and IT alignment within a firm.

By identifying the differences between the objects of study (business units) new insights may be revealed as to how and possibly why the inter-organizational service exchange has developed the way it did. A better understanding of this complexity should help scholars in completing the puzzle and eventually help CEO's to be more successful in outsourcing IT.

1.3. RESEARCH STRATEGY

The objective of this study is to explore the development of the interorganizational service exchange over time based on empirical data, to understand how and why it has developed the way it did. There is a 'How' and a 'Why' part to this question. To answer the 'How' part of this question this study shall use quantitative methods. The 'Why' part shall be answered using qualitative methods.

This study will be conducted following the empirical cycle, or so-called hypotheticodeductive approach. This hypotheticodeductive approach is particularly useful studying descriptive, longitudinal, causal and influencing effects (Saunders, Lewis, & Thornhill, 2012). There are five stages to the empirical cycle: Observation, Induction, Deduction, Testing of hypothesis and Evaluation. The empirical cycle is visualized in Figure 2.
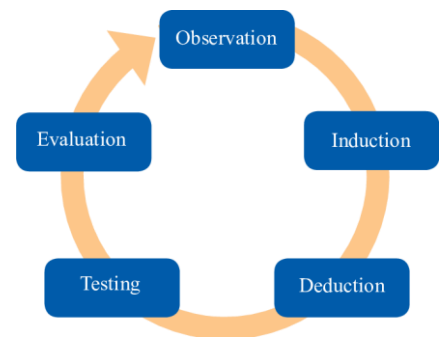
Figure 2 - Empirical Cycle (Saunders, et al 2012)

The steps of the empirical cycle have been operationalized as follows;

- **Observation** - An extensive literature review was performed identifying the mechanisms and complexity of the concepts of BIA and ITO. Based on synthesis of these findings, theoretical gaps in knowledge and points of interest are identified. These insights will be used to further narrow down the research objective.
- **Induction** - Using inductive reasoning a conceptual model is constructed based on general assumptions about the relation between BIA and ITO. These propositions explain **why** a certain setting of variables should translate in an expected outcome.
- **Deduction** - Based on these propositions new situations are hypothesized in which the propositions are expected to hold and instruments are developed for testing.
- **Testing** - These early hypotheses will then be tested retrospectively in a quasi-experimental setting, based on longitudinal data, to see **how** the interorganizational exchange has developed.
- **Evaluation** - Finally conclusions will be drawn based on the evaluation of the findings from the quasi-experiment, to develop new insights about the impact of **ITO** on **BIA**.

1.4. THESIS OUTLINE

The remainder of this thesis is structured as follows. First, the **theoretical background** used for this thesis shall be provided. It will entail a broad discussion about the concepts of **Business and IT alignment** and **IT Outsourcing** and elaborate on the main **problems** of achieving business and IT alignment in large firms as brought forward in literature.

Next the justification and focal point of this study shall be further elaborated on and the main **research question** shall be broken down into sub-questions. Together these sub-questions should provide an answer as to '**How'** BIA is impacted by ITO and '**What'** causes this. Subsequently the **conceptual model** shall be introduced, describing the broad concepts and mechanisms as found during literature review. Using this research model early **hypothesis** are developed about how ITO and BIA relate. Subsequently, the design of the **quasi-experiment** itself shall be discussed in detail, before reporting on its findings in the **results** section. Based on between and within case analyses, preliminary conclusions are drawn that will be discussed in a Delphi study that shall be incorporated in the **conclusions** section.

Finally, the **discussion** sections shall be used to elaborate on the implications and limitations of this study. New propositions are presented and recommendations will be made for future research.

2.   LITERATURE REVIEW

An extensive literature review was conducted to develop a better understanding of the concepts of Business and IT alignment and IT outsourcing. The literature review focused particularly on what the two concepts are, how their main mechanisms relate and what the challenges are of achieving Business and IT alignment in IT Outsourcing. This review process is conceptualized in Figure 3.
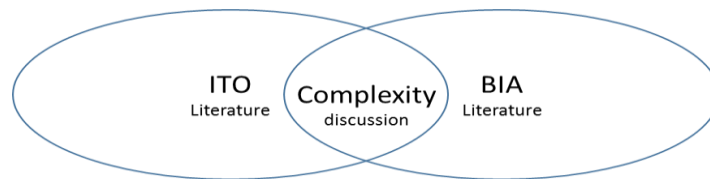
Figure 3 - Exploring the Complexity of realizing BIA in ITO

The following sections will provide a summary on the main findings from this literature review. First, the domain of business and IT alignment shall be reviewed. Then, the relation between the two concepts shall be elaborated on from a purchasing and supply management perspective. Finally, the Domain of IT Outsourcing shall be explored in depth to provide a thorough understanding of how the level of business and IT alignment in an organization may be impacted by outsourcing IT services.

2.1.   THE DOMAIN OF (BUSINESS AND IT) ALIGNMENT

2.1.1. THE CONCEPT OF BUSINESS AND IT ALIGNMENT

According to Henderson and Venkatraman (1993) the BIAG is "...the result of differences in culture, objectives, incentives and the mutual ignorance for the other group's body of knowledge". They argue that for a firm to be successful, business and IT should be aligned on both a strategic level as well as on a functional level. They visualized this process using their Strategic Alignment Model (SAM).

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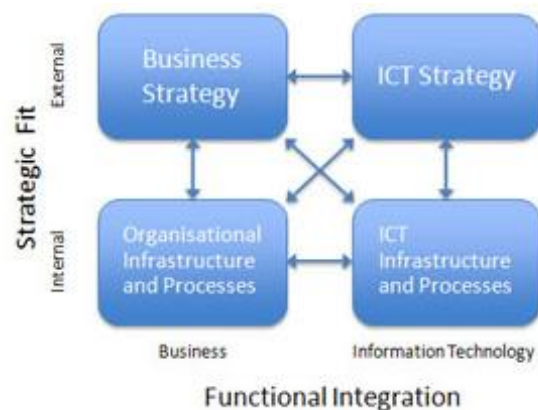
The SAM (Henderson & Venkatraman, 1993), shown in   ,
describes how internal and external linkage should be created between business and IT; externally by
aligning business and IT strategy and internally by aligning organizational structure and processes with IT
infrastructure and processes. The SAM (Henderson & Venkatraman, 1993) assumes that if linkage on one of
these two levels is missing, the other will also fail to be successful. By introducing the SAM, Henderson &
Venkatraman (1993) established the concept of Business-IT Alignment (BIA).
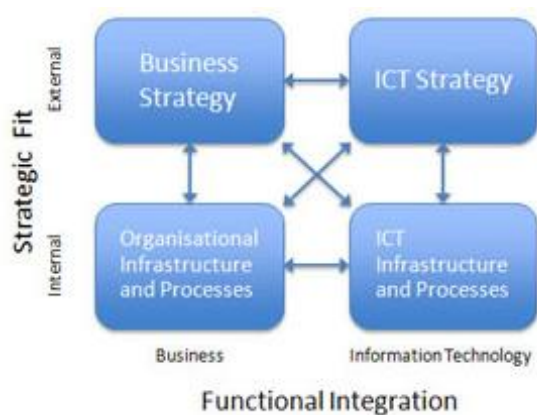
Figure 4 - Strategic Alignment Model, Henderson and Venkatraman (1993)
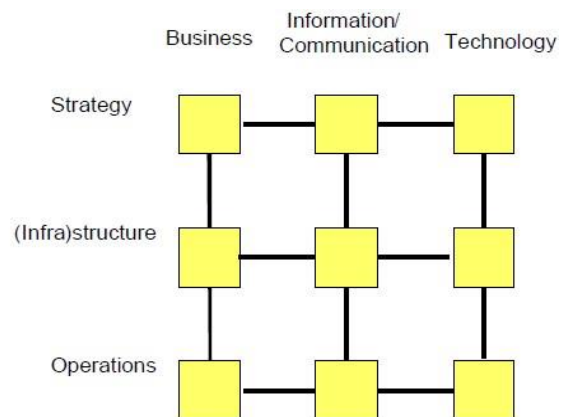
Figure 5 - Generic framework IS, Maes (1999)

Maes (1999) extended on the concept of BIA and advocates that all four perspectives should be managed as
an integrated part of an organization's information strategy, rather than two separate domains. He
developed the integrative generic framework for IS (Maes, 1999) shown in Figure 5. It illustrates how all nine
panes of the model should be aligned for Information Strategy to be effective. The framework is particularly
helpful for large firms, where the distance between business and IT is relatively large. The two center-axis'
provided in the model, between business and IT and strategy and operations, suggest that BIA is about
integration rather than alignment of functions. IT should be seen as part of the value chain, rather than
merely a supplier of a service. In addition, Maes(1999) contributes by explicitly stating that alignment

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between the operational panes should be managed on each level of the organization, being the individual level, the team level and departmental level.

Reich & Benbasat (1996) describe the process of BIA as being two-dimensional by differentiating between the creation of intellectual and social linkage. The intellectual dimension to alignment is about the internal consistency between business and IT objectives, and the external validity of plans and processes. The social dimension to alignment is about the mutual understanding and commitment to business and IT objectives, plans and processes. Potentially promising plans may be poorly executed when organizational actors are not committed to them. On the other hand, flawed plans will create suboptimal results even if implemented perfectly. By differentiating between intellectual and social linkage, Reich & Benbasat (1996) mark the importance of alignment between actors on the operational levels of the relationships between business and IT.

A definition of BIA that reflects both the importance of intellectual and social linkage (Reich & Benbasat, 1996) as well as the importance of internal and external alignment (Henderson & Venkatraman, 1993) is provided by Derksen (2013) and will be adopted for this thesis;

> *"The on-going process of realizing and optimizing the relational mechanism between business & IT, by working on the IT effectiveness of the organization in order to realize enterprise business objectives* (Derksen, 2013)*"*

2.1.2. CRITERIA OF BUSINESS AND IT ALIGNMENT

Drawing on the definition of BIA adopted from Derksen (2013), BIA is the overall process of optimizing the relational mechanism between business and IT to realize objectives. This definition can be split out into two components; realization of objectives and relational effectiveness. Effective governance of these two components is essential in improving the alignment between business and IT (Luftman & Kempaiah, 2007).

Luftman (2000) identified a set of skills and governance practices that allows measuring and subsequently improving an organization's level of alignment. Luftman's Strategic Alignment Maturity Model (SAMM) uses six criteria to measure BIA maturity. These criteria are listed in Table 1.

Table 1 - BIA maturity criteria (Luftman, 2000)

• Communication	o Effective communication between business and IT
	o Knowledge sharing

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		o	Organizational learning
•	Value measurement	o	IT/Business metrics
		o	Formal assessments/reviews
		o	Continuous improvement
•	Governance	o	Strategic planning
		o	Organizational structure
		o	Controls (budgetary/prioritization)
•	Partnership	o	Strategic planning between business and IT
		o	Perception of IT value
		o	Relationship/Trust style
•	Scope & architecture	o	Standards articulation
		o	Architectural integration
		o	Transparency/Flexibility
•	Skills	o	Innovation/change readiness
		o	Management style
		o	Social, political, trusting environment

Each criterion is measured and assessed on a five-level maturity scale. The five levels of maturity progress from an initial/ad hoc process to an optimized process. The SAMM (Luftman, 2000) was positioned as a maturity model, based on the assumption that it is not possible for an organization to evolve from level one to three without having to evolve through level two. This rationale corresponds with the concept that relations mature over time (Sing & Dyer, 1998). All aspects of the SAMM (Luftman, 2000) should reach a certain level of maturity for it to effect organizational performance. It draws on skills and measurement of business and IT performance as preconditions for developing effective communication and becoming a partner. Governance, value measurement and scope & architecture revolve around the creation of intellectual linkage, while skills, communication and partnership are related to the creation of social linkage (Reich & Benbasat, 1996).

The SAMM(Luftman, 2000) assumes that high levels of BIA maturity equate to effective BIA, but BIA is a different construct then BIA maturity. BIA maturity is a proxy of BIA, as BIA effectiveness itself is measured by looking at the output of the relational mechanism, rather than the input in the form of skills, processes and governance. A frequently used method of measuring BIA maturity in organizations is by means of a survey (Luftman, 2000). Both IT and Business are asked to rate the maturity of their processes, skills and understanding of each other. By comparing the results, discrepancies between the two indicate misalignment.

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High appreciation of the interactions between business users and the IT department, indicates high BIA. These practices of alignment are still drawn on by scholars as important in achieving BIA and have been incorporated in global standards for IT Service Management (ITSM). The most commonly used standard in ITSM is the Information Technology Infrastructure Library (ITIL). This is a collection of best practices and concepts that aim to create the perfect conditions for organizations to allow alignment on operational levels to occur (Scarff, 2011). The ITIL metrics recognize both objective measurement of performance, as well subjective measurement. The objective or intellectual performance is dedicated to making sure business objectives are met, while social or subjective performance is dedicated to making sure the relationship is satisfying. Satisfaction is not just the effect what the relationship produces, but the effect of how it is produced. Capturing business satisfaction is essential in avoiding the value-trap (Hunter, Nunno, Meehan, McMullen, & McDonald, 2012). According to Hunter et al. (2012), the value of IT is easily overlooked and seen as the delivery of technology rather than an integrated part of the business delivering business performance. IT should actively measure and manage the perception of IT business value.

2.1.3. BUSINESS AND IT ALIGNMENT IN IT OUTSOURCING

While ITO and BIA are two very different concepts, they both rely on effective relational interaction and the alignment of objectives, skills, and governance practices (Derksen, 2013). ITO is an intervention focused on the supply side of the procurement process, by increasing the IT capability and performance. BIA is dedicated to improving the relation between supply and demand. Therefor ITO is no substitute for effective BIA and cannot be successful without being aligned with business demand (Derksen, 2013). Firms engage in ITO to improve the effectiveness of the IT organization. They seek enhanced capabilities at lower cost (Deloitte Touche Tohmatsu, 2016). To manage the successful delivery of these outsourced services, firms must reshape heir IT departments to effectively manage the service suppliers in meeting business demand (Tucker & Woolfe, 2000). When firms outsource IT services, the role of the retained IT department effectively becomes that of a Purchasing and Supply Management (PSM) organization, managing the timely and costly delivery of services for its customers. This organizational model is referred to by Gartner (Tucker & Woolfe, 2000) as Information Strategy Lite (IS-Lite).

The IS-Lite model, shown in Figure 6, illustrates the roles at various aspects of the business pyramid. IT is responsible for driving innovation, change delivery and support of infrastructure. This requires the alignment of strategy, tactical and operational effort. This variety of roles and responsibilities in ITO is where the buyer-

supplier relationships in ITO distinguishes itself from other buyer-supplier relationships and where the relationship between BIA and ITO becomes eminent.
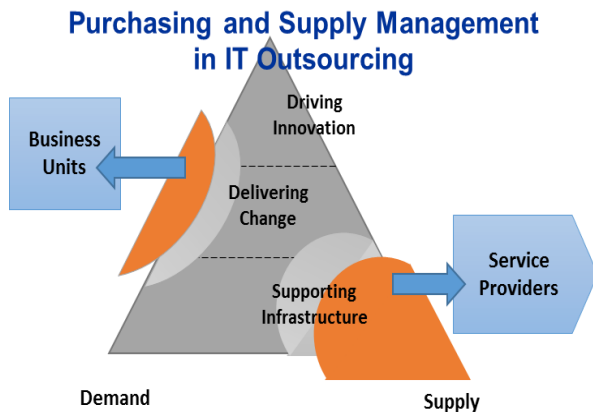
Figure 6 - IS Lite model, Gartner, Inc. (2000)
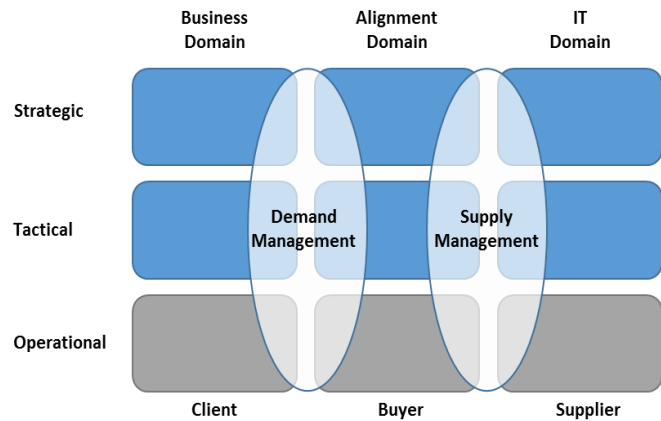
Figure 7 - Modified IS framework of Maes (1999)

Applying the IS lite model to the integrative generic framework for IS by Maes (1999) provides a better overview of the alignment processes in ITO. This modified model is illustrated in Figure 7. Relationships between clients, buyers and suppliers exist at levels of the model and all panes in the model must be aligned for the interorganizational service exchange and Information Strategy (IS) to be successful. When all panes in the model are aligned except for the bottom three panes, all three organizations will fail to be effective in achieving their business objectives, picturing the difference between the complexity of strategic versus operational alignment.

2.1.4. THE COMPLEXITY OF SERVICE DELIVERY IN IT OUTSOURCING

The popularity of ITO has led to IT services being commoditized and offered by specialized service providers at reduced costs (Auberta, Rivarda, & Patry, 2004). These services are increasingly delivered directly to the PSM organization's customers in so called service triads (van der Valk & van Weele, 2011). Unlike the traditional service supply chain, where services are produced and consumed between buyer and supplier, service delivery in service triads bypasses the control of the buying organization. Services are both produced and consumed between the service provider and the customer. According to van der Valk & van Weele (2011), service triads are characterized by the customer(C) requesting services from the buying organization(B), which has outsourced the service delivery to a specialist provider that interacts directly with

the customer(C). The main differences between the traditional service supply chain and the service triad supply chain are visualized in Figure 8.
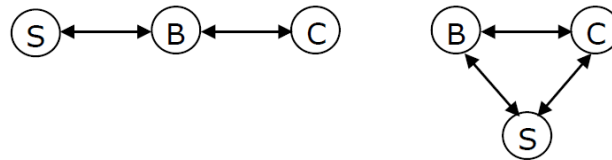
Figure 8 - Service supply chains versus service triads (van der Valk & van Weele, 2011)

Outsourced services can be categorized following a usage-based classification provided by Wynstra (2006). The following four categories are distinguished; component, semi-manufactured, instrumental and consumption. When delivering IT services to the business, is the value proposition of the IT department, delivery of the IT services by its supplier directly to the business can be seen downstream service delivery. This type of service classifies as 'component' delivery. According to van der Valk, Wynstra & Axelsson (2009), effective buyer–supplier interaction differs based on the type of service provided. They argue that it is essential in component delivery that both the buyer and supplier have an excellent understanding of the end customer's requirements.

While the concept of service triads is usually used to describe the interaction of three individual firms, it also applies to corporate IT organizations that outsource the service delivery of IT services for other business units part of the same firm (van der Valk & van Weele, 2011). In this scenario the IT organization of the outsourcing party, responsible for managing the service delivery, can be seen as the buyer and the business units effectively become the customer. For the remainder of this thesis the customer shall be referred to as the client. The term client also indicates there is an ongoing relationship between client and supplier (van der Valk & van Weele, 2011).

2.1.5. CLOSING THE GAP IN SERVICE DELIVERY TRIADS

According to van der Valk & van Weele (2011), the complexity for achieving business benefits in service triads is generic for any type of BPO and requires alignment of the business objectives of all three parties in the supplychain in combination with effective governance of the interaction processes. BIA in ITO-triads does not only require external alignment between the customer and supplier on a corporate level, but also between the internal IT strategies of both organizations (Keating, Gregor, & Campbell, 2013). This additional dimension to Venkatraman (1993) alignment model, makes it that not only the objectives of buyer and

supplier may contradict, but also the objectives of the customer could contradict with either parties' objectives (van der Valk & van Weele, 2011).

Well aligned organizations should be capable off bringing benefits for both parties involved (Levina & Ross, 2003), making it more attractive to cooperate going forward. The opposite effect can be seen when contracts are not aligned, or suppliers over-promise on what can be delivered for the contract price. In this scenario, the risk of the "Winner's Curse (Kern, Willcocks, & van Heck, 2002)" arises. This reference to gaming theory is used to illustrate that in ITO only the principle of a win-win situation is appropriate. When organizations are too focused on winning, they will find there is a curse to winning that makes it that achieving alignment on an operational level effectively becomes impossible, leaving nothing but losers.

The problem of failing to achieve alignment on an operational level is particularly seen in large firms that get into outsourcing looking for cost reduction and improved strategic alignment on a macro level (Curry & Willcocks, 1998). Even though there seems to be a match between the organizations on a corporate level, the interaction on an operational level between organizations can remain problematic, as firms fail to effectively organize the transactions and/or relations involved in sourcing IT services (van der Valk & Rozemeijer, 2009).

Two types of problems are identified. Firstly, these large organizations tend to pursue the same services at lower cost, while in theory they should be able to achieve the same scale benefits as their outsourcing partners by performing the services in-house (Feeny & Willcocks, 1998). Derksen (2013), in his distortion, emphasizes the importance for organizations to understand the impact of the outsourcing decision on the level of intrinsic knowledge of the business. He reasons that loss of intrinsic business knowledge has a negatively impact on the firm's capability and the level of BIA.

These findings are supported by earlier conclusions from Feeny & Willcocks(1998), who found that too rigorous outsourcing has a negative effect on the capabilities of an organization to recognize IT value in context of the business, or the ability to effectively build the relation and managing its outcomes. The pain and cost of the selection, installation and transitioning in ITO are often underestimated and should be expected to have a negative impact on the performance of the IT services (Lacity, Khan, & Willcocks, 2009).

Secondly, when organizations that consist of multiple divisions with very different strategies, or a diversity of business units (e.g. a combination of production sites, tech-centers and sales offices) engage in service

triads, alignment needs to be established and managed between each buyer-supplier-customer combination. Meaning different business units could require individual operational alignment processes.
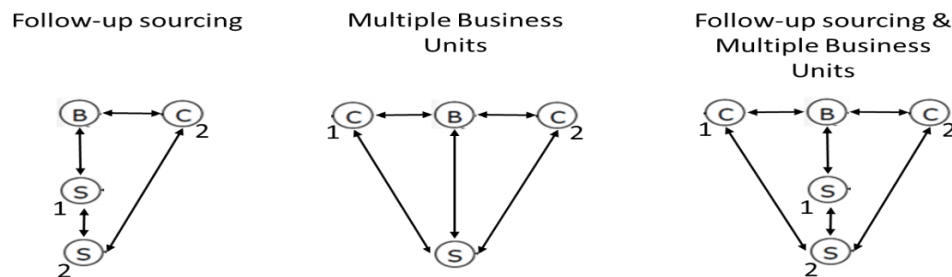
Figure 9 - Service Delivery Triads - Modified version from van der Valk & van Weele, 2011)

When suppliers decide to deploy subcontracting parties, and engage in so-called "follow-up sourcing", additional challenges arise in maintaining internal alignment and preventing opportunistic behavior from suppliers (Gottschalk & Solli-Saether, 2005). Figure 15Figure 9 illustrates how the complexity of the service delivery triads increases when additional customers (business units) or suppliers from follow-up sourcing are included. To mitigate this complexity and risks, more contractual control is put in place by increasing the contract complexity, but cultural differences between countries and business units call for more flexibility and responsiveness in contracts (Ribbers & Beulen, 2003). These discrepancies cause problems for the development of interorganizational trust (Gottschalk & Solli-Saether, 2005).

2.2. THE DOMAIN OF IT OUTSOURCING

2.2.1. BACKGROUND ON IT OUTSOURCING

The domain of ITO has been studied in over a thousand publications in major international journals and is considered the most common and mature form of BPO (Lacity & Willcocks, 2001). As a result of ITO becoming the norm and the increased dependency on IT, the field of ITO has gained an accelerated interest by scholars and practitioners. Ninety percent of ITO articles have been published in the past decade and show interest has developed from focusing on the outsourcing decisions itself, to managing the buyer-supplier relationships (Liang, Wang, Xue, & Cui, 2016).

Literature focusing on the outsourcing decision itself, typically uses Resource Based View (Wernerfelt, 1984) or Transaction Cost Economics (Williamson, 1979) to provide explanations as to when and why organizations should engage in ITO (Curry & Willcocks, 1998). These theories are based on the beliefs that companies should focus on those activities that make it unique and should disinvest when complexity, risk and

transaction costs increase. Lacity, Willcocks, & Khan (2011) provided a TCE based model that consolidates 73 determents of ITO success that they decoded from thirty-one major journals. This model, shown in Figure 10, is considered as one of the most complete models on the field of ITO.
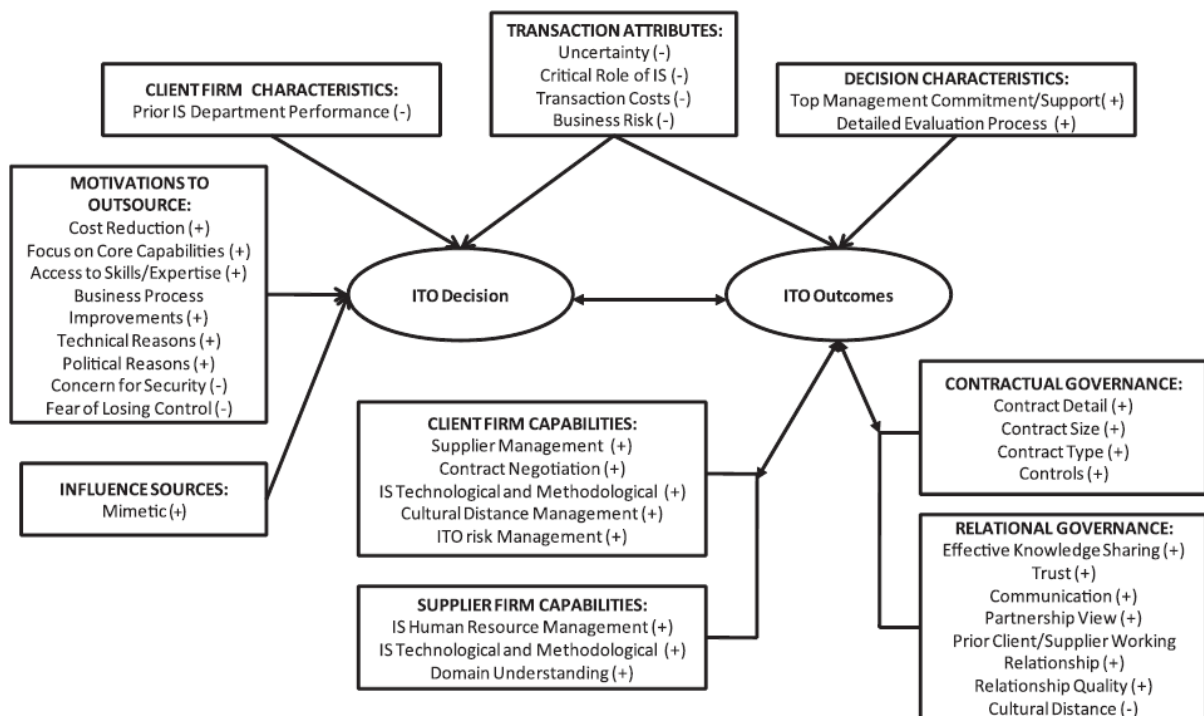
Figure 10 - Theoretical ITO Framework (Lacity et al., 2011)

While the sourcing decision remains seen as an important determent for ITO success and vice versa (Lacity, Willcocks, & Khan, 2011), these theories do not provide useful explanations that help understand the complexity of the buyer-supplier relationships required for ITO success. According to Gottschalk & Solli-Saether (2005), ITO success is a complex and joint effort between buyer and supplier that strongly depends on the effectiveness of the relationship, the availability of skills and the application of controls of which the outcomes are embedded in organizational and cultural context.

This emphasis of the importance of the relational interaction is supported by Kern & Willcocks (2000) who conclude that, unlike traditional transaction-based exchange, ITO success largely depends on the relational interactions part of the exchange. In this so-called relational exchange, buyer and supplier rely heavily on the status of their relationship, or their 'relational contracts' to govern the exchange process (Schurr, Oh, & Dwyer, 1987).

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In a study on 741 ITO findings, Lacity, Willcocks, & Khan (2011) concluded that understanding the relationships that arise in ITO are critical for understanding the dynamics of ITO success and should be receiving more interest of scholars. Lacity, Willcocks, & Khan (2011) believe the relational interactions at the heart of ITO success are unique and call for a theory of its own. In their attempt to define such a theory, they position the importance of relational and contractual governance, as critical relationship effecting resources and propose that organizations with mature governance capabilities are likely to deliver better ITO outcomes than immature IT organizations (Lacity, Willcocks, & Khan, 2011).

2.2.2. THE COMPLEXITY OF IT OUTSOURCING RELATIONSHIPS

Research dedicated to understanding the complexity of the buyer-supplier relationships, frequently uses social management theories such as Social Exchange Theory (SET) and the relational view on the firm (Sing & Dyer, 1998) to rationalize behavior in- and outcomes of- interorganizational exchange. In contradiction with the RBV, Dyer & Singh (1998) use SET (DeLamater & Ward, 2013) to propose a 'relational view on the firm'. They argue that we should look at the interfirm' s interactions as being the actual critical resources that build competitive advantage and reduce transaction costs.

Recognizing the centrality of the relationship, researchers have studied relationship attributes that should exist to ensure effective relational exchange in ITO. In doing so, they have adopted both the buyer's perspective as well as that of the supplier and objects of study have varied from the relationship effecting capabilities and behavior of either party (Levina & Ross, 2003), to the outcomes of the relationship in the form of trust and commitment (Feeny & Willcocks, 1998).

Research on relational exchange also focused on how these necessary relationship attributes develop over time. The preponderance of research views the development of interorganizational exchange as a long-term, evolutionary process driven by the relational interaction between partners over time. Kern & Willcocks (2000) provided a model (Figure 11) that clearly illustrates the different types of interactions that take place between actors at various levels of the relationship (from contractual to embedded) as well as the complex behavioral aspects that develop as part of the interactions over time. The main types of variables distinguished by the model (Kern & Willcocks, 2000) are the relationship focus or governance, the interactions, behavior, time and the organizational or relational context.
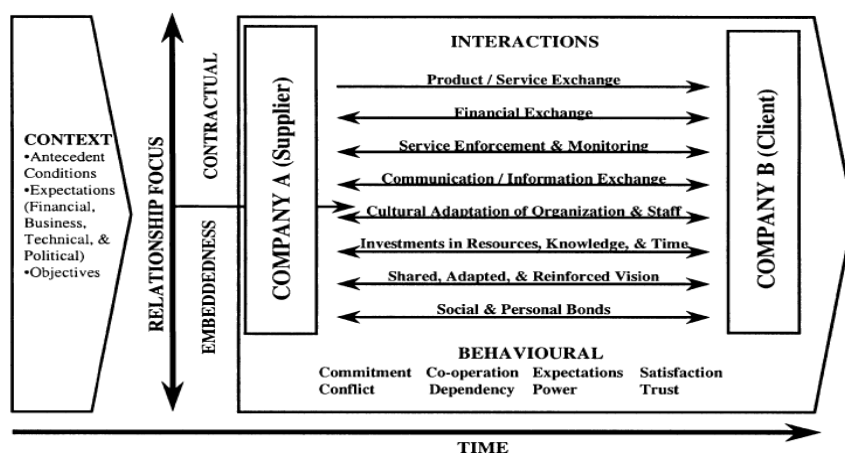
Figure 11 - Outsourcing Relationship model, Kern & Willcocks (2000)

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Trust and commitment are opted as the product of effective relational interaction(Schurr, Oh, & Dwyer, 1987) and are believed to be directly related to ITO success (Heiskanen, Newman, & Eklin, 2008). According to Feeny & Willcocks (1998) the constructs of trust and commitment are closely interrelated, as trust is a necessary condition for commitment and proven commitment perceives the development of the believe that one is trustworthy.

2.2.3. BALANCING TRUST AND CONTROL

Among others, Poppo & Zenger (2002) found the application of trust and control, in managing the buyer-supplier relationship, to be the main determents for the development of trust and commitment in ITO. Balancing the application of control and trust is also referred to as governance. Governance can be seen as the application of power. Power, according to Mintzberg (1983), is the capacity or capability to effect (or affect) organizational outcomes, often referred to as control. This capability of an organization to effect organizational outcomes is largely determined by the relational skills of either party in the relation as well as the compatibility between the two in terms of culture (Mao, Lee, & Deng, 2008) or the strategic alignment between partners (Ribbers & Beulen, 2003). Governance, or control, can be used to manage the input and output of the interorganizational exchange, but also the behavior exhibited in the relationship.

In outsourcing theory, two main types of governance are distinguished; contractual and relational governance. Contractual governance is about application of formal means such as contacts, structures and processes to safeguard the interorganizational exchange from opportunistic behavior by suppliers, or so-called agents (Poppo & Zenger, 2002). Output based control in contractual governance, involves measuring the output of the agent's actions, while behavior-based control, involves evaluating the process leading to the desired outcomes and making sure the relational interaction is further developed to become even more effective on the long-term. In addition, input based controls can be used to assure the availability the right skills in either organization.

Relational governance is focused on the mechanisms of trust and commitment in the relationship. Interorganizational exchanges in ITO are repeated exchanges that are embedded in social relationships. According to Sing & Dyer (1998), relational governance emerges from the mutual values and agreed-upon processes between parties. The results are social norms that minimize transaction costs as they promote flexibility, solidarity and information exchange (Sing & Dyer, 1998).

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Flexibility facilitates the adaptation to the occurrence of unforeseeable events. Solidarity facilitates mutual adjustment and joint action. Information sharing facilitates the adaptation to- and integration of- short term and long-term goals and plans. Following the relational view, commitment to such norms results in mutuality and cooperation characterizing the resultant behavior (Sing & Dyer, 1998).

According to Poppo & Zenger (2002) relational and contractual governance are no substitutes for each other, but function complementary. They concluded that highly effective organizations combine formal and informal safeguards, rather than focus on one or the other. A more recent study by Akkermans et al. (2018) demonstrated how strong relational governance can help improve contractual commitment and thereby the outcomes of the service performance.

These findings are also supported by Kern & Willcocks (2000) who conclude that in ITO is more complex then classic service exchange in service dyads and can't rely solely on contractual interaction, or trust, to be sufficient. They add that the ability to balance relational and contractual governance, largely depends on the capabilities of the buyer's organization to manage the relationships. The application of control versus trust largely draws on experiences. Drawing on the conclusions of Lacity, Khan, & Willcocks (2009), positive experiences of ITO will have a reciprocal effect on trust and control in the buyer-supplier relationship, while negative experience will result in more complex contracts and less relational success. The balancing of control versus trust in the relationship will determine the level of ITO success (Lacity, Willcocks, & Khan, 2011). The ITO process requires continuous rebalancing these variables over time to remain successful.

Rebalancing should be seen as different from maintaining balance, as changes in balance actually keep the relation alive and are the motor for organizational innovations. Benbya & McKelvey (2006) define this process as being "continuous evolutionary, reconciling top down 'rational designs' with bottom-up 'emergent processes'". Although the continuous evolutionary nature of the relationship, an effective relationship should be expected to mature over time and becoming more beneficial to either party.

2.2.4. DEVELOPMENT OF TRUST AND COMMITMENT

According to SET, actors in an exchange relationship will always act based on self-interest or independence to maximize one's benefits (DeLamater & Ward, 2013). Benefits or outcomes of a relationship are calculated by subtracting its costs from the rewards it provides. Following the propositions of SET, there are two ways to increase benefits; Reducing cost without affecting rewards or Increasing rewards without affecting cost.

When long-term outcomes are perceived as equal, suppliers are expected to choose alternatives providing better immediate outcomes (DeLamater & Ward, 2013). When the long-term objectives of buyer and supplier are well aligned, they will both be committed to the relationship and suppliers should be expected to be wanting to reduce their immediate cost by improving their performance. Equally, when the relationship lacks commitment, because the objectives of buyer and supplier are not aligned, the supplier should be expected to be focused on its immediate rewards, by reducing cost without improving long-term outcomes. Another proposition of SET is that the volume and duration of relational exchange between parties increases the development of trust. It allows the creation of personal bonds, improves the quality of communication and alignment of processes. As all parties in the triad develop stronger relationships and improve the alignment of their processes and objectives the performance of the service triad as a whole should be expected to improve.

A highly cited study by Zaheer, McEvily, & Perrone (1998) looks at trust in interorganizational relationships as a concept that exists at various levels of the firm. They analyzed trust at two levels of analyses; interorganizational- and interpersonal trust. Figure 12 illustrates these different focal points of the interorganizational relationships. Using a sample of 107 buyer-supplier interfirm relationships, Zaheer, McEvily, & Perrone (1998) concluded that interpersonal and interorganizational trust play different roles in affecting performance of interorganizational exchange. They found a significant relation between interorganizational trust and performance and while there was no significant relation between interpersonal trust and performance, there was a significant relation between the two types of trust.
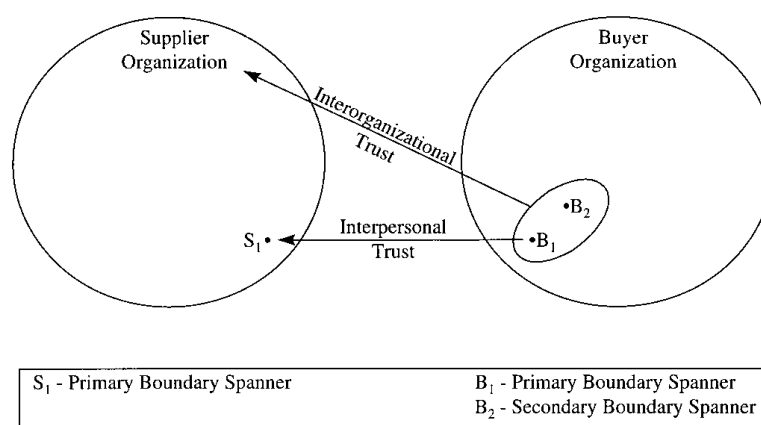
Figure 12 - Interorganizational and Interpersonal Trust, Zaheer, McEvily, & Perrone (1998)

This effect was described by proposing interorganizational trust being the result of interpersonal trust. When interorganizational trust develops over a period of time, interorganizational trust is believed to become more prominent for the effectiveness of the relationship (Zaheer, McEvily, & Perrone, 1998).

This prominent effect of interorganizational trust on the relational interaction is also recognizable in the ITO Maturity model provided by Gottschalk and Solli-Sæther (2006). Their typology model identifies three stages (or types) of the ITO relationship. This ITO maturity model, illustrated in Figure 13, provides a useful framework to help understand the impact of outsourcing and how it is expected to develop over time.
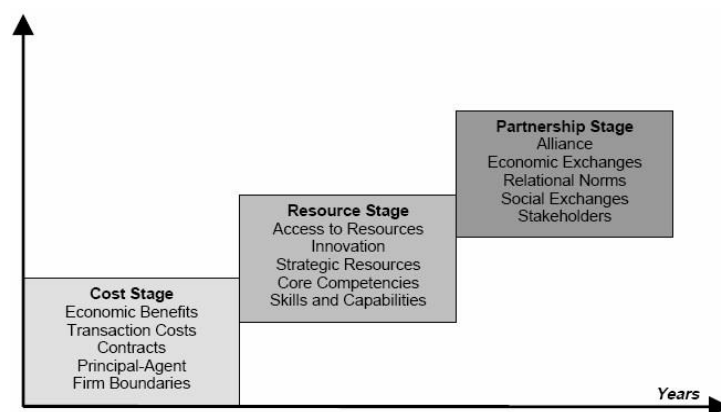
Figure 13 - ITO Maturity Model, Gottschalk and Solli-Sæther (2006)

The earliest stage or begin stage of the maturity model is the "Cost Stage", where an organization`s main motive for ITO is cost minimization. In this stage the risk for the winner curse (Kern, Willcocks, & van Heck, 2002) is most likely to occur, as contractual negotiation is used to achieve benefits of either party. When the relation develops beyond this point and both parties start looking at each other as a useful resource, the relation has reached its "Resource Stage". In this stage, the supplier should be able to understand the buyer's business better and add to the performance of the organization. When the organizations further integrate their resources and capabilities to the extent that they create competitive advantage they could otherwise not have achieved, they are considered to have met the "Partnership Stage".

The ITO maturity model (Gottschalk & Solli-Sæther, 2006), illustrates maturity as a linear process on a firm level. Zaheer et al. (1998) call for longitudinal and in-depth research to develop a better understanding of the relation between the development of inter personal trust versus interorganizational trust. In addition, they believe that understanding trust in cross-national settings deserves more attention, as cultural differences may alter the development of trust and its impact on relational exchange.

2.3.   IT PERFORMANCE IN INTERORGANIZATIONAL EXCHANGE

2.3.1.   DEFINING IT(O) SUCCESS

The effect of IT on business performance is generally believed to be indirect, but increasingly considered to be a determent of economic performance of the firm (Luftman, Rigoni, Dorociak, & Kempaiah, 2008). Firms with high levels of BIA are more successful then companies that are not (Schlosser, Weitzel, Wagner, & Beimborn, 2010). The level of BIA in ITO is determined by the alignment and interaction between buyer, supplier and clients. Business or IT performance is the combined outcome of the network of actors' part of the service triad. The total performance of client, buyer and supplier only equals the sum of the individual performance when objectives are perfectly aligned. This makes measuring ITO success problematic and the concept of BIA increasingly relevant (Hefley & Loesche, 2009).

Cullen, Seddon, & Willcocks (2008) argue, that success should also be seen in its context, making it important to understand the organizational context before and after outsourcing. There main argument being that not only the organizational context may change, but it may also impact the development of the relationship after outsourcing (e.g. close relationships impacted by outsourcing may lead to resistance to the new supplier). A buyer's objectives and expectations of ITO, may change over the life of the contract, impacting the satisfaction about the delivered services, even when the provides services have not changed. Moreover, partners are not merely interested in the final outcome of the outsourcing arrangement (i.e., financial benefits or achievement of objectives on time), but they desire satisfaction with the process (i.e., allowing for flexibility with changing circumstances or that partners develop a mutually beneficial relationship). Because organizations are increasing the breadth and depth of outsourcing, they do not want to be asked to endure an unsatisfactory outsourcing process even if the agreed upon outcomes are achieved. Instead, their evaluation of success includes the process as well as the outcomes (Schwarz, 2014).

Levina & Ross (2003) argue the importance of measuring performance both in terms of satisfaction as well as more absolute metrics. According to Levina & Ross (2003) the perception of success might be inconsistent with the achieved performance based on absolute metrics of performance. Understanding when this occurs allows correction. Additionally, absolute metrics may affect the perception of ITO performance over time (Han, Lee, Chun, & Seo, 2013).

Lacity and Willcocks (2001), in their research on ITO Success, look at success as being relative to an organization's or even personal goals. While goals may appear to be the same from a strategic point of view (e.g. cost savings), success may be perceived very differently. In later research, Lacity, Willcocks, & Khan (2011) identify a least six different stakeholders in a single firm, all having their own expectations of IT: senior management, IT management, business unit management, IT staff, end users, in-house specialist. Besides varying between different stakeholders, or business units within a firm, the perception of ITO success is also believed to have a cultural (Ribbers & Beulen, 2003) and temporal dimension to it (Cullen, Seddon, & Willcocks, 2008). Following Lacity and Willcocks (2001), client satisfaction is the best metric for ITO success, as it accommodates for all these different expectations even when they change. Satisfaction measures the coherence between an outsourcing-firm's satisfaction with the ITO services provided by its supplier (Lacity & Willcocks, 2001). Consistent with broader services literature, satisfaction is viewed as the critical outcome measure to evaluate the quality the service delivery process. This thesis will follow this rational by defining satisfaction as;

> *"…the extent to which client expectations are met or exceeded by a supplier of ITO services (Lacity & Willcocks, 2001)."*

2.3.2. THE RECIPROCAL EFFECT OF SATISFACTION

Perhaps the most interesting aspect of satisfaction in buyer-supplier relationships, is the perceived reciprocal effect of satisfaction on its main determents (Han H.-S. , Lee, Chun, & Seo, 2013). The reciprocity principle, in relational interaction, is based on the pattern of mutual reinforcement of each other's actions in the relationship (Benbya & McKelvey, 2006). The process begins when one participant makes a 'move' and the other party reciprocates, initiating a new round of exchange. Once set in motion, each consequence creates a self-reinforcing cycle. Han et al.(2013), in their study on the effect of satisfaction on the development of trust and commitment in ITO relationships, gathered data demonstrating a strong reciprocal effect of ITO performance on satisfaction about the relationship. They argue that as buyers become more satisfied about outcomes of the ITO relationship, they develop more trust about the supplier. The improved levels of trust are related to more commitment from both parties to the relationship, making the relational interaction more successful on the long-term. These findings are supported by Benbya & McKelvey (2006), who look at relational interaction as a coevolutionary mechanism that matures over time and heavily draws on experiences to be successful. They add, that the degree to which people and cultures are sensitive for this reciprocal effect varies.

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Satisfaction comes about naturally when the client's expectations are being achieved. Expectations are partially defined by the service level agreements put in place between buyer and supplier, but also rely on the quality of the relational interaction itself. Satisfaction can be defined as a "positive effective state resulting from the appraisal of all aspects of a firm's working relationship with another firm" (Anderson & Narus, 1990).

2.3.3. CLIENT SATISFACTION IN CULTURAL CONTEXT

Essential in both BIA and ITO is the concept of client's satisfaction or the perceptions the quality of the exchange process. Customer satisfaction is believed to be embedded in cultural context. Hofstede (1984) defined culture as "The collective mental programming of the human mind which distinguishes one group of people from another". Cultural differences determine the interaction process itself, because of cultural distance and differences, as well as the perception of equal results, or so called cultural differences in appreciation (Hofstede, 1984). Ribbers & Beulen (2003) suggest that these cultural dimensions may be associated with response bias when measuring BIA or IT(O) performance and could therefore help explain some of the differences in client satisfaction across countries.

Client satisfaction is comprised of true score and error. True score is the client's actual experience with IT. The error aspect comprises all factors that influence client satisfaction, but are not related to the client's objective experience. Causes of error can be distinguished as random or systematic. Random error is caused by factors not directly related to the delivery of the services, such as a client's mood. Random errors are assumed to cancel itself out in large enough random sample, for it is not consistent.

Systematic error, or response bias, influences client satisfaction in a consistent direction. Systematic error can be the result of sampling error or measurement error but it can also be the result of cultural differences between respondents. Culture determines to a large extend how people within or between cultures interact and interaction with members of the same culture in turn reinforces culture (Hofstede, 1984). Certain cultures are programmed to be less long-term oriented and will focus on immediate outcomes, while others are programmed to be long-term oriented and are willing to invest more at the beginning of a relationship. Similar, some cultures are more optimistic than others and look at a glass as being half full rather than half empty.

Hofstede (1984) has studied cultural differences between countries and categorized four dimensions that help differentiating between generalized behavior across countries; Power Distance, Individualism, Masculinity, and Uncertainty Avoidance. Each dimension is indexed on a scale of 1-120, that can be subdivided into six levels as shown in Figure 14.

1-20	21-40	41-60	61-80	81-100	101-120
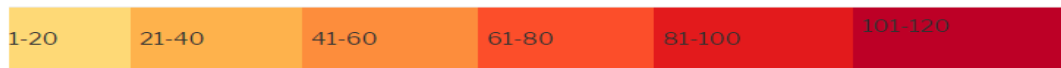
Figure 14 - Hofstede's (1984) Cultural Index Scale

Power Distance (PDI) expresses the attitude of a culture towards the fact that individuals are not equal in society. High PDI indicates that less powerful members of organizations of the country accept or even expect power to be distributed unequally. Low PDI countries will be more direct in their communication and feel less restricted in expressing their opinion.

Individualism (IND) reflects the extent to which individuals in different cultures prioritize their personal needs versus the needs of the collective whole. Countries with high IND are likely to respond less frequent to satisfaction survey's or be less concerned about improving the relationship if it is not in their own best interest. Low IND countries may be expected to improve the relationships as they put more value in harmony, conflict avoidance and conformity.

Masculinity (MAS) captures how a culture looks at the role of gender in society. Men are believed to be assertive, tough and focused on material success, while women are believed to be more modest, tender and concerned with the quality of life. Put differently, men are expected to be interested in being the best (Masculine) and women are expected to be most interested in liking what you do (Feminine). MAS as a cultural dimension refers to a preference for assertiveness and frankness in communication. People from low MAS (high Femininity) countries tend to be consensus-driven and indirect in their communication. High MAS will make people act more demanding and assertive in their communication.

Uncertainty Avoidance (UAI) reflects the extent to which people of a country are comfortable with ambiguity. People from countries with high UAI have a relatively high need for clarity and structure. As a result, they may be more demanding from a communication point of view to make sure their uncertainty is addressed.

Understanding and accounting for the impact of these cultural differences on response bias allows a more accurate picture of the 'true' score versus the error caused by systematic differences.

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3. THEORETICAL FRAMEWORK

3.1. PROBLEM DISCUSSION

Summarizing on the findings from literature, I derive three main justifications for this study. First, while the development of the **inter-organizational interaction** is underlined in literature as the most important aspect of the constructs of ITO and BIA, it has not been the focal point of any previous studies. As a result, little is known about the development of the relational interaction itself, or how it is impacted by outsourcing.

Secondly, underlying the concept development, **time and culture** are continuously brought forward as important factors in the emergence of effective inter-organizational interaction, yet rarely included in studies on ITO. Partially, because of time constraints or the inability to collect the necessary data, conclusions are often drawn based on retrospective cross-sectional analyses. I consider the lack of evidence from longitudinal field research a gap in literature that does not do right to the complex nature of the relational dynamics of ITO.

Third, I believe the relation between **absolute performance and satisfaction** is underexposed in ITO literature. Most studies consulted in this literature review mention the importance of objective measurement of performance, as opposed to merely measuring the subjective perception of success. However, when ITO success is studied, it's typically done in a subjective manor, often in the form of survey's. A better understanding of the relation between the objective and subjective performance could provide an interesting addition to literature.

Finally, the unit of analyses in ITO literature, as well as studies on BIA, is typically conducted at the macro or firm level. Meaning the conclusions about ITO success and BIA are based the strategic fit between buyer and supplier and the aggregated outcomes of the two parties. There has been no research that I know of, with the exception of a single case study performed by Heiskanen, Newman, & Eklin (2008), at the level of day-to-day operations between the IT suppliers and **individual business units**. Narrowing the unit of analysis down to the relational interaction between a single location and its supplier(micro-level), should contribute by allowing a better understanding of the emerging nature of the relation.

3.2. RESEARCH QUESTION

The objective of this study as introduced in the introduction section of this thesis is to develop a more in depth understanding about how the concepts of ITO and BIA relate and affect the inter-organizational service exchange over time. Based on the exploration of the constructs of BIA and ITO relationships conducted in this thesis and to address the identified gaps during literature review, this thesis will meet the objective by focusing on the relational interaction itself. Not merely the interaction between the two constructs shall be studied, but also the combined effect in the form of IT performance.

The following main research question has been defined for this study:

How does IT Outsourcing impact the development of relational interaction between clients and IT suppliers over time on a business unit level?

To assure the findings are translated to usable insights for practitioners a follow up question has been defined;

How can these insights subsequently help organizations improve their IT Outsourcing performance?

Underlying these questions various sub questions are identified to breakdown the concepts in measurable proportions;

- What are the effects of IT Outsourcing on Client Satisfaction and IT Performance on the short term?
- What are the effects of IT Outsourcing on Client Satisfaction and IT Performance on the long term?

- How is the relationship between Client Satisfaction and IT performance effected by ITO?
- How does relational maturation effect the Client Satisfaction and IT performance in ITO?
- Are the effects of ITO on Client Satisfaction and IT performance related to cultural differences?

3.3.   THE RESEARCH MODEL AND HYPOTHESIS

The main reason this study was to further explore the hypothesis that ITO has a negative effect on BIA (Derksen, 2013). Informed by the findings from literature review on the constructs of ITO, Business and IT Alignment and IT Performance, the conceptual process model illustrated in Figure 15 was developed to address the identified gaps brought forward in the problem discussion of this thesis.

The model illustrates how performance or appreciation of IT services it the result of the alignment of Business and IT and how these interactions are subject to maturation of relationships and rooted in cultural differences between actors. By incorporating the main relations between the constructs of ITO, Client Satisfaction and IT Performance in the Inter-Organizational Service Exchange, alternative and additional hypothesis have been phrased that will help to develop a better understanding of the impact of ITO on the process of BIA on a micro level of the firm. The following sections will properly introduce the hypotheses underlying the model.
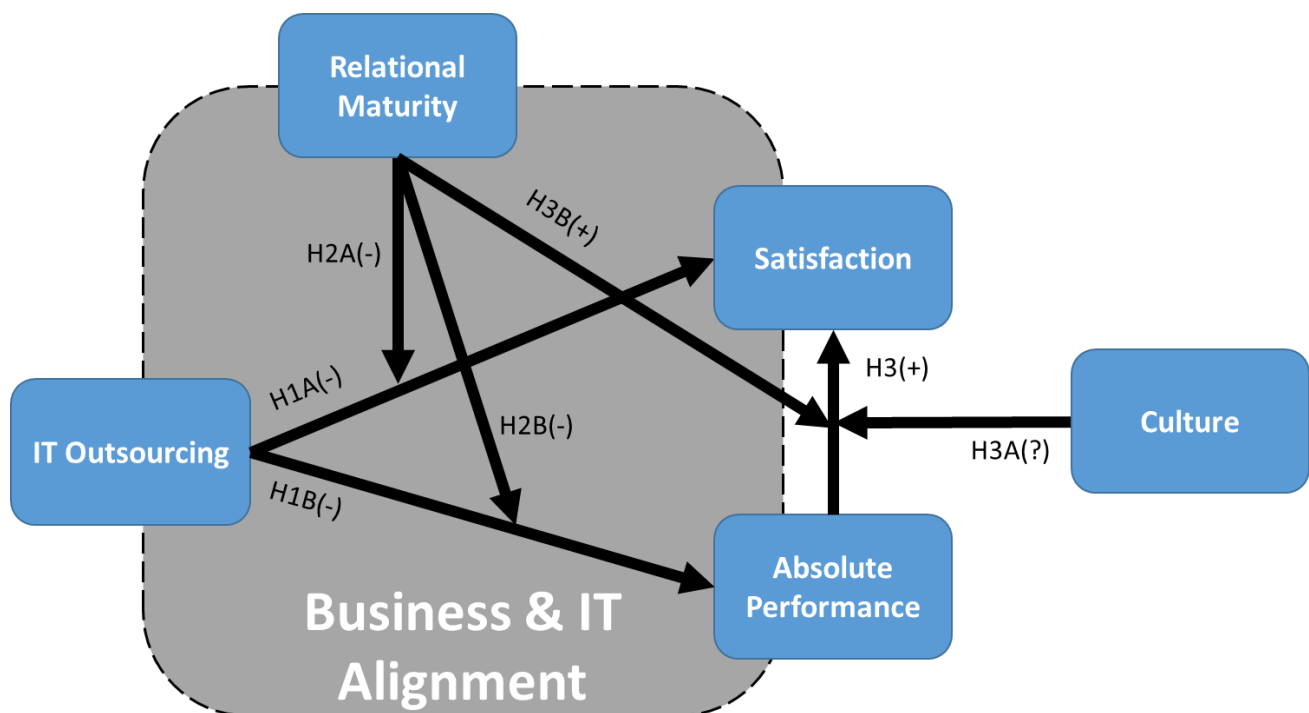
Figure 15 – Conceptual model of the object of study

3.3.1. THE RELATION BETWEEN IT OUTSOURCING AND BIA (H1)

The first and main hypothesis in this study is that ITO has a negative effect on the level of BIA. This hypothesis was adopted from Derksen (2013) and is based on the propositions that derive from SET (DeLamater & Ward, 2013) and agency theory (Gottschalk & Solli-Saether, 2005) that were explored in the literature section of this thesis. While ITO brings improved capabilities at lower (anticipated) cost (Deloitte Touche Tohmatsu, 2016), ITO is believed to come with loss of trust and implicit business knowledge and commitment (Beulen, 2011). Implicit knowledge, commitment and trust are embedded in relationships that have matured over time (Beulen, 2011). By renewing these relationships, the interorganizational and personal trust build up in the previous relationships is lost (Zaheer, McEvily, & Perrone, 1998).

The process of Business and IT Alignment is the process of managing supply and demand and with it the alignment between supplier's performance and client's expectations (Maes, 1999). Therefor BIA is believed to be the main determent for IT performance itself. Well aligned Business and IT processes, or high levels of BIA, should result in improved effectiveness of the relational interaction between client and supplier (Derksen, 2013). Improved communication, mutual understanding and integration of processes will be reflected in the absolute performance of the IT organization and the satisfaction about the services by the client organization (Luftman, 2000). Therefore, client satisfaction and absolute IT performance are used as proxies for the alignment between business and IT. The following hypothesis is used to test if this is still true in outsourcing;

Hypothesis 1   -   ITO has a negative effect on BIA on an operational level

> **Hypothesis 1A -   ITO has a negative effect on Client Satisfaction**

> **Hypothesis 1B -   ITO has a negative effect on absolute IT Performance**

3.3.2. THE MODERATING EFFECT OF RELATIONAL MATURITY

Objectives of client and supplier are often not aligned in the 'cost- stage' of outsourcing relationship (Gottschalk & Solli-Saether, 2005), but as the relationships further matures and suppliers prove to be trustworthy, exchanging parties should be expected to increase the alignment of each other's objectives and processes to reduce their immediate cost and improving their performance (DeLamater & Ward, 2013). By improving the alignment of objectives and processes, the mutual understanding of each other improves and implicit business knowledge is replenished over time.

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Subsequently, this improves the effectiveness of information sharing between parties and the perception of the other as a skillful partner in meeting its objectives. As supplier and client become more experienced with one another, new relations develop between exchange parties based on repeated (social)exchanges. These exchanges result in the development of personal- and interorganizational- trust and provide a relational contract that's improves transactional efficiency between parties (Sing & Dyer, 1998). Eventually the interorganizational trust becomes dominant (Zaheer, McEvily, & Perrone, 1998) and the ITO relationship may develop to the 'Partnership Stage' and realize or exceed the effectiveness of the previous service exchange relationships with inhouse IT.

Following the definition adopted from Derksen (2013) , the process of BIA is an ongoing process of optimization. Therefor it should be expected that as relationships develop, so should the BIA, regardless of the IT service provider being internal or external to the client's organization. To verify this moderating effect of relational maturity on BIA, the following hypothesis are operationalized;

Hypothesis 2   -   <u>Relational maturity has a negative moderating effect on the impact of ITO on BIA</u>

> **Hypothesis 2A -   Relational maturity has a negative moderating effect on the impact of ITO on Client Satisfaction**

> **Hypothesis 2B -   Relational maturity has a negative moderating effect on the impact of ITO on absolute IT Performance**

3.3.3.   THE RELATION BETWEEN ABSOLUTE PERFORMANCE AND CLIENT SATISFACTION

Following Lacity and Willcocks (2001), client satisfaction is the best metric for IT(O) success, as it measures the coherence between an outsourcing-firm's satisfaction with the IT services provided by its supplier (Lacity & Willcocks, 2001). Levina & Ross (2003) argue the importance of measuring performance both in terms of satisfaction as well as more absolute metrics, because the perception of success might be inconsistent with the achieved performance based on absolute metrics of performance. Understanding when this occurs allows correction. Additionally, absolute metrics may affect the perception of ITO performance and have a reciprocal effect (Han, Lee, Chun, & Seo, 2013). To test the relation between absolute performance and client satisfaction the following hypothesis is incorporated;

> **Hypothesis 3A -   Improved absolute performance results in improved satisfaction**

Following the principle of relational maturation (Sing & Dyer, 1998) and the hypothesized reciprocal effect of absolute performance on client satisfaction (Han, Lee, Chun, & Seo, 2013), it may also be expected that the relation between absolute performance and client satisfaction is also moderated by relational maturity. Put differently, absolute performance and client satisfaction in exchange relationships should develop to be more consistent with each other over time.

Hypothesis 3B - Relational maturity has a positively moderating effect on the relation between client satisfaction and absolute performance

3.3.4. CULTURAL ASPECTS OF BUSINESS AND IT ALIGNMNET

The relation between absolute performance and client satisfaction is believed to be biased by cultural differences (Derksen, 2013). On the other hand, these cultural differences may also be expected to determine how the BIA is impacted by outsourcing and how (interorganizational) relationships develop over time (Hofstede, 1984), but it is hard to predict how.

Drawing on Hofstede (1984), cultures with high MAS or IND may be expected to be more demanding from the supplier and less understanding for the time it takes for the relationships to mature. This may result in less satisfaction among clients. At the same time, they may be expected to be more assertive and open in their communication, resulting in improved absolute performance by the supplier. Cultures with high UAI, may be more stressed by the outsourcing decision then cultures that are more open to change and uncertainty and show more impact on the BIA in the early stages of the relationship. On the other hand, cultures with low IND, MAS or high UAI may be expected to develop better relationships as they put more value in harmony, collectivity and sustainable processes to reduce risk. Based on these assumptions, the relation between absolute performance and client satisfaction should be expected to show correlation with the cultural profiles defined by Hofstede (1984).

To develop a better understanding of the effects of cultural differences on the relation between absolute performance and client satisfaction, the effect of culture will be controlled for in the model, but no prediction is done for its severity or direction. These effects will be tested using the following hypothesis;

Hypothesis 3C - Cultural factors have a moderating (?) effect on the relation between client satisfaction and absolute performance

4. RESEARCH DESIGN

This section will first elaborate on the considerations that were made to use the quasi-experimental approach for this study, before introducing the setting for the quasi-experiment and the quasi-experimental design itself. Finally, it will provide a detailed description of the measures used in the quasi-experiment.

4.1. QUASI-EXPERIMENTAL METHOD

Experimental design, at a minimum, involves using several treatment groups, which have received a unique treatment before measuring and comparing its outcomes, to assess whether the different treatments resulted in significant differences between groups. Experimental data can demonstrate causation in terms of isolation (limiting/ controlling extraneous constructs), association (correlation, regressions, etc.) or temporal precedence (cause preceding the effect). However, conducting a true experiment is not always an option. Due to the limited sample size, artificiality of laboratory conditions and the problems of designing appropriate real-world settings, the external validity and generalizability of laboratory experiments is questionable when used in social studies (Verschuren & Doorewaard, 2010). Therefore, social studies regularly use a quasi-experimental design to study complex real-world phenomenon's. Unlike laboratory experiments, quasi-experimental design is conducted in a real-world setting, examining the object of study in its actual field settings. The main differences with a true experiment are that the quasi-experimental method doesn't use random assignment to groups or allow isolation and control as in a laboratory setting.

In this study a quasi-experimental method was chosen, because the in real-world conditions for interfirm relational interaction cannot be built as part of a true experiment. In addition, causation and objective longitudinal relational behavior can't be assessed by means of cross-sectional survey's or interviews. Furthermore, this quasi-experiment will use a non-equivalent group design. A nonequivalent group design (NEGD), is a between-subjects design in which participants are not randomly assigned to groups or conditions. The strength of a NEGD in this study, is that it allows comparison of organizational units subjected to different treatments in their natural context. This, in turn, increases the external validity and generalizability of the research outcomes. The internal validity of a quasi-experiment is relatively low, because it lacks random sampling and doesn't allow controlling the contextual variables of the construct over time.

The quasi-experimental approach is a relatively valid method to show causal relation over time, but it doesn't easily allow explaining it due to the low internal validity. To improve on the internal validity of this study, results will be reflected on by means of a follow-up Delphi study (panel of experts from buyer, supplier and client parties in this study). The quasi-experiment allows identifying causal patterns and zooming in on interesting cases based on their comparison as well differentiation. Discussing some of the main findings from the experiment allows in-depth elaboration on the complexity of the object of study in its natural context, without being constrained by rigid quantitative models and questionnaires (Voss, Tsikriktsis, & Fronlich, 2002). The quasi-experimental findings allow a better understanding of the object as a whole and how it has developed over time, before trying to understand why it has developed the way it did.

Whereas the downside of this approach may be that the researcher is biased by these findings, it may also enhance the effectiveness of the interviews with experts, by asking the right or relevant questions and allowing iterative analyses of the conclusions found from comparison (Voss, Tsikriktsis, & Fronlich, 2002). This flexibility can bring more depth into the researched topic, proving it to be of more practical relevance (Verschuren & Doorewaard, 2010). The combination of these quantitative and qualitative research methods allows triangulation, which strongly improves validity when building theory (Voss, Tsikriktsis, & Fronlich, 2002). It also strongly improves the generalizability of the findings from retrospective quantitative analyses, from the point of view that "…the explanation of quantitative findings and the construction of theory based on those findings, will ultimately have to be based on qualitative understanding" (Meridith, 1998)".

The combination of these quantitative and qualitative research methods creates triangulation of conclusions, improving both internal and external validity of findings. Literature identifies five more guiding principles to enhance the (internal)validity of a quasi-experiment (Verschuren & Doorewaard, 2010). These principles have been operationalized in this study as described next.

By Design and Argument. The quasi-experiment design itself should be dedicated to ruling out alternative explanations for its findings. This can be done by adding treatment groups, control groups, pre- and post-measurement, or including covariates as part of the statistical analysis. Providing the right argumentation to rule out potential threats to validity. Although this is, on its own, a relatively weak approach, it is also very straight forward and necessary condition for validity. Posteriori arguments will in most cases be considered more valid then priori arguments.

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This quasi experimental design will use pre-, peri- and post measurement of treatment and control groups as observed in retrospect from multiple business units. It uses posteriori arguments to reflect on the hypothesis. Every combination of business unit and treatment group in effect represents an experiment to improve generalizability.

By Measurement or Observation. Secure measurement and strong observation may help rule out threats for validity such as alternative explanation for the causal relationship. By actively exploring indirect effects of overlooked factors threat can be significantly reduced. For example, using hierarchical regression or covariables allows neutralizing other effects before looking at the main effects of a model. This quasi experiment will include various control variables in its analyses to account for differences between groups and within groups over time.

By Analysis. Alternative explanations can also be ruled out using statistical analysis. For example, by conducting a two-way ANOVA to perform between group analyses to further improve validity. Another strong aspect of the ANOVA relevant to quasi-experimental design is that it analyses the variances within and between groups rather than group-means like standard T-tests do. This allows better comparison of nonequivalent groups. In addition, ANCOVA is used to analyze the effect of control variables.

4.2.   FIRM INTRODUCTION AND CONTEXT

The setting for this study is provided by data collected from a single firm. The studied firm is a large multinational pharmaceutical company that has gone through the effort of outsourcing two years ago. The firm employs over 90.000 full time employees in more than 100 countries, with one or more business units per country. The firm has outsourced a significant portion of their IT services to both off-shore and on-shore partners. Some services have been outsourced to the same partner for over three years, while their most recent and largest partnership was initiated in 2016 and effected IT services that had been managed in house until that time. This reorganization involved outsourcing desktop services as well as the first line of contact between the client and service supplier, also known as the 'Global Service Desk (GSD)'. The GSD is responsible for providing desktop services, first line support and/or assigning service request to the right internal or external IT service provider for resolution.

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In addition, much of the local or site IT was centralized to fit the new organization. Due to these reorganizations, it may be expected that the impact of outsourcing is noticeable for all users, even though it doesn't involve all services. It is unlikely however, that retained relationships between clients and IT service providers are equally impacted by the event, then these relationships that are reset by the event.

The global setting and diversity of operations of the firm (offices, plants, distributions center's) in combination with the intra and interorganizational relationships between BU's and IT service providers, at different stages of their maturity, provides an interesting and valid population for this study, that allows analyses of samples based on comparison as well differentiation.

This study utilizes the fact that the selected firm has implemented ITIL incident management processes over four years ago. As a result, it has record of the interaction of business units and IT suppliers (both inhouse and outsourced), stretching back from well before outsourcing and continuing up until today. Not only have they got record of the transactional data related to these interactions, but they have also collected client satisfaction surveys that were issued with the pending closure of every individual interaction. A brief description of these two data sources is provided below:

Service Tickets - Records of interaction between a person (client) from a certain business unit and the IT organization (supplier), allowing to categorize and calculate absolute measures of performance.

Surveys - Records of client satisfaction surveys that are send for every ticket that gets resolved (four 4-scale questions, a Boolean and a comment field). Appendix I - provides an example of the survey

For every ticket a survey is send to the submitter of the ticket (client), capturing the appreciation of the supplier's performance in relation to the specific ticket or interaction. This longitudinal field data provides as the main source of data for this quasi-experiment and will be studied in retrospect.

4.3. QUASI-EXPERIMENT DESIGN

This section will elaborate on the quasi experimental design itself, by describing its main concepts and outlines the context for its operationalization.

To test the main hypothesis for this thesis, this quasi-experiment will study the immediate and long-term effects of ITO on BIA in the selected firm. More precise, the effects of outsourcing IT services on the IT effectiveness and client satisfaction on a BU level. These effects will be studied by observing the effectiveness and satisfaction resulting from the intra- and interorganizational interaction at various stages (pre-, peri- and post the event of outsourcing).

The focal point for this study is the relational interaction between clients and IT suppliers (both external and internal) on a business unit level. Every BU maintains intra- and interorganizational relationships with IT service providers through the interpersonal interaction of client and supplier. These interactions will be studied in retrospect of the past three years to examine how these intra- and interorganizational relationships have been impacted by the event of outsourcing and how they differ from one another over time. To do so, two nonequivalent groups are identified within each BU;

Control Group (Group 0)	IT services that were performed by the same IT suppliers (both external and internal) throughout the quasi-experiment. These preexisting and ongoing relationships between clients and IT suppliers (both external and internal) provide for the control group of the quasi-experiment.
Treatment Group (Group 1)	IT services that were previously performed by inhouse IT, but were outsourced to external IT suppliers during the quasi experiment. The related intra-organizational relationships have been replaced by interorganizational relationships. This transitioning is operationalized as the experimental treatment condition.

The Non-Equivalent Groups Design (NEGD) used in this study is the most commonly used design in quasi-experimental studies and is structured like a pretest-posttest randomized experiments, except for the fact that it lacks random assignment. It uses intact groups (that are believed to be similar) as treatment and control groups. In this case, BU's provide for the nonequivalent groups (NEG's).

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Both treatment and control group are studied on a BU level, analyzing observations from before-, during- and after IT outsourcing, to measure the differences between groups over time. To accommodate for this, the following three experimental phases are defined;

Pre-Outsourcing	The year before outsourcing (2015). Both groups' interorganizational relationships in this phase are believed to be mature and stable. This phase is used for the pre-tests of the quasi-experiment.
(Peri-) Transitioning	The year of outsourcing (2016). Outsourcing was initiated early 2016 and June 2016 the outsourcing deal became fully effective. During this transitioning phase (Cost stage), the treatment takes place as 'Group 1' services and relationships are renewed. This phase is used for the peri tests of the quasi-experiment.
Post-Outsourcing	The year after outsourcing (2017). At this stage, 'Group 1' relationships are expected to be renewed and more mature then in 'Phase 1'. The partnerships should be ready to progress to the resource stage or further. This phase is used for the post-tests of the experiment.

Within group differences, between each pair of experimental phases, will be studied and compared to the control group to test the immediate and long-term effects of ITO on BIA. The following within group differences are identified;

Pre- versus Peri- outsourcing	Testing the effects of IT outsourcing on the immediate term
Peri- versus Post- outsourcing	Testing the effects of relational maturation on the effects of IT outsourcing
Pre- versus Post- outsourcing	Testing the effects of IT outsourcing on the long term

This replicated experimental setting improves the internal validity of the quasi experiment. A representation of the basic experimental design is provided in Figure 16.

Within	Group	Pre-Test	Treatment (Peri-Test)	Post-Test
BU1	0	O	X	O
	1	O	O	O
BU2	0	O	X	O
	1	O	O	O
BU..	0	O	X	O
	1	O	O	O

X = The treatment   - The outsourcing of IT

O – The Observation   - Pre-, Peri- and Post-Tests

Figure 16 - Basic Experimental Design

4.4. INSTRUMENT CREATION AND VALIDATION

In this section the instrument creation for the quasi-experiment shall be further elaborated on to assure clarity, repeatability and validation of construct measurement. An important constraint for the experiment, is the availability of longitudinal data. The available data was initially explored to find the most appropriate measures for each construct. Table 2 provides an overview of the selected measures for each construct. Each measure will be observed for each experimental group at all three phases of the quasi-experiment. The following paragraphs will describe the operationalization of these measures in more detail.

Table 2 - Overview of Experiment Variables

Construct	Variable	Description
Client Satisfaction	CS_PRO	Professionality
	CS_TIME	Skillful and timely
	CS_EXP	Business Knowledge
	CS_INF	Communication
	CS_CSAT	Overall Client Satisfaction
Absolute IT(O) Performance	PER_TIME	Incident resolution time
	PER_FTR	First time right
Cultural Context	CLT_PDI	Power Distance Index
	CLT_IDV	Individuality Index
	CLT_MAS	Masculinity
	CLT_UAI	Uncertainty Avoidance Index

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4.4.1. TREATMENT GROUPS, PHASES AND GROUP DIFFERENCES

To test the effects of outsourcing IT services on the IT effectiveness and client satisfaction on a BU level, this quasi-experiment uses a treatment and control group (Group 0 and Group 1). Tickets and surveys are assigned to treatment groups and phases based on the BU the client belongs to, the date the ticket was submitted and whether or not the services were outsourced.

Tickets and surveys related to IT services that were outsourced in 2016 are assigned to the treatment group ('Group 1'), the remaining tickets are assigned to the control group ('Group 0'). This condition is operationalized as a dichotomous variable called TRT_GROUP and assigned a 0 for the control group and a 1 for the treatment group (Table 1).

Table 3 – Variable - IT Outsourcing

Variable	Group	Value
Treatment Group (TRT_GROUP)	Control Group	0
	Treatment Group	1

Tickets and surveys related to IT services that were performed in 2015 are categorized as Pre-Outsourcing interactions. Tickets and surveys related to IT services that were performed in 2016 are categorized as Peri-Outsourcing interactions. Tickets and surveys related to IT services that were performed in 2017 are categorized as Post-Outsourcing interactions.

The three different experimental phases are operationalized as the variable Phase using the value 0-2 as illustrated in Table 4.

Table 4 – Variable – Maturity Phases

Variable	Experimental Phase	Value
Experimental Phase (PHASE)	Pre- Outsourcing	0
	(Peri-)Transitioning	1
	Post-Outsourcing	2

Evaluating the differences between the control and treatment group across various phases of the quasi experiment will test the hypothesis about the effects of ITO and Maturation on Client Satisfaction and IT Performance. Main and between subject effects will be tested for using ANOVA. Post hoc tests shall be performed for follow testing and pairwise comparison of within and between group differences.

Differences between pairs shall be studied using a so called 'Difference in Difference' analyses, modeled as a regression. This method compares the average change over time between the treatment group and the control group, with the objective to improve the comparability of nonequivalent groups. For each difference in difference analyses a dichotomous is created. The variable is set to 0 for the precondition and 1 for the post condition. The names of the variables and the value per experimental phase are illustrated in Table 5.

Table 5 – Variable – Pairwise Comparisons

	Relational Maturity		
Variable	**Pre- Outsourcing**	**(Peri-)Transitioning**	**Post-Outsourcing**
Difference Pre > Peri	0	1	
Difference Peri > Post		0	1
Difference Pre > Post	0		1

4.4.2. CLIENT SATISFACTION

Business and IT Alignment is the extent to which the business perceives IT to be a professional, reliable, knowledgeable and capable partner. This perception is captured by the satisfaction of the client about the service delivery. Client satisfaction in this study is measured by means of a survey. The client satisfaction survey is send after every ticket as it is closed by the service provider. The survey consists of five different questions that collectively capture the overall client satisfaction about the service delivery process (CS_OVR, using a 4-point likert scale. Each question covers a different aspect of BIA corresponding to the SAMM provided by Luftman (2000). The granted score reflects the maturity level for that particular aspect. Table 6 shows the questions from the survey and how there are aligned with the SAMM.

Table 6 - BIA Survey

	Business & IT Alignment Maturity Level (Luftman, 2000)	*Level 1*	*Level 2*	*Level 3*	*Level 4*
Measure	*BIA Questions*	*Strongly Disagree*	*Disagree*	*Agree*	*Strongly Agree*
CS_PRO	*I was treated in a professional matter*	*1*	*2*	*3*	*4*
CS _TIME	*The incident was resolved within my expected timeframe*	*1*	*2*	*3*	*4*
CS _EXP	*The incident was resolved to my expectations*	*1*	*2*	*3*	*4*
CS _INF	*I was kept informed as to the status of my request*	*1*	*2*	*3*	*4*
CS _CSAT	Overall this was a positive experience	1	2	3	4
CS _OVR	The Overall Client Satisfaction	μ	μ	μ	μ

4.4.3. ABSOLUTE PERFORMANCE

The construct of absolute, or objective IT performance is expressed by standard measures of SLA performance. The measures that could be derived from the historical dataset in this quasi-experiment are the "Incident Resolution Time" and the "First Time Right". Because the majority of tickets is resolved on the same day that it is logged and large variation exists in the absolute number of days, data was further categorized to reduce effect of outliers in the analyses. Based on the analyses of variances a scale of 1-4 was selected for the variable of Incident Resolution Time(PER_TIME). First Time Right(PER_FTR) is a Boolean value of Yes or No. This variable has been recoded as Yes=4 and No=0. The average of the PER_TIME and PER_FTR provide the measure for the construct of Absolute performance(ABS_PER). A detailed description of these variable is listed in Table 7.

Table 7 - Measures of Absolute Performance

Measure	Definition	Score
PER_TIME	**Incident resolution time** *The time (days) it takes to resolve a ticket. The sooner a ticket is closed, the higher the performance - Scale; 0 days=4, <=3 days=3, <=5 days=2, >5 days=1*	0-4
PER_FTR	**First time right** *The incident was resolved to the expectation of the client in the first attempt (No=0, Yes=4)*	0/4
PER_ABS	**Absolute Performance** *The average score of PER_TIME and PER_FTR*	μ (PER_TIME, PER_FTR)

4.4.4. CULTURAL CONTEXT

Cultural differences are expected to be responsible for explaining some of the response biases for both BIA and satisfaction. To measure these potential effect the cultural index scores as provided by Hofstede are used. The index scores for the countries part of the quasi-experiment are listed in Table 8. The index scores use an absolute scale of 1-120.

Table 8 - Cultural Index for Experiment Countries (Hofstede)

Country	PDI	IDV	MAS	UAI
Denmark	18	74	16	23
Germany	35	67	66	65
Ireland	28	70	68	35
Netherlands	38	80	14	53
Norway	31	69	8	50
United Kingdom	35	89	66	35

4.4.5. CONTROL VARIABLES

Groups (BU's) are similar as they are all part of the same firm and interacting with the same IT suppliers during the same period, but BU's are not equivalent to each other. They differ in size, complexity, capabilities and strategy. These differences change over time as BU's grow, downsize or develop new business models. In particular, the repeated interaction between BU's and client over time is believed have an effect on the development of interpersonal and interorganizational trust (Sing & Dyer, 1998). To try to account for these differences and improve the comparability of the BU's, the number of users and tickets for each BU at every phase of the quasi-experiment are included as control variables.

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4.5. CASE SELECTION AND SAMPLING

Cases for the quasi experiment were selected in collaboration with the studied firm. The firm showed a specific interest in understanding the difference between countries and business units in Europe, the Middle East and Africa (EMEA). One reason for this being the fact that the main contact for the firm was the IT director responsible for the IT Service Delivery for all plants, offices and warehouses in the EMEA region. Selecting cases from a geographical and organizational region reduces the variation in firm context between business units. A steady firm context allows better isolation of cultural differences and (local)organizational context, which is a big plus for quasi experimental studies, but reduces the generalizability of findings to other firms. After restricting the selection of cases from all business units in the firm to the selection of cases from the EMEA region, the population was reduced to the Western European countries. This was done after assessing the required and available data for the quasi experiment. Some of the differences in the way the counties were operated were believed to be so significant, that it was deemed to be too complex to compare based on the available data. In addition, practical differences such as inaccurate data and language (Slavic or Arabic) would largely increase the requiring data validation effort. Eventually, six countries were selected for sampling, being; Denmark, Germany, Ireland, the Netherlands, Norway and the United Kingdom.

All tickets and survey data for these six countries was collected and normalized into a single dataset for the quasi experiment. To increase the generalizability of cases, only tickets of the type 'Service Request' are included. Tickets raised by BU's that didn't exist before the outsourcing occurred or no longer existed after outsourcing, due to mergers and acquisitions, are excluded from the dataset. Only tickets with a completed (valid) survey were considered for the quasi-experiment.

From the remaining dataset, BU's with less than fifty tickets per phase of the quasi experiment were removed to assure a significant sample size for each group. As a result, no cases were selected for Denmark or Norway. There was only one BU for each of these countries and the available sample size (even on a country level) was insufficient (<150 overall). Due to the uncontrolled setting in quasi-experimental research a significant sample size is desirable. This reduces the effect of standard error by averaging out exceptions and enhances the generalizability, allowing better conclusions on trends.

Figure 17 provides an overview of how the sampled data relates to the overall population of the firm and EMEA region. The EMEA region represents 17% of total tickets logged in the entire firm. The selected EMEA countries represent 17% of the total EMEA tickets. Of these countries, 17% could be paired with a valid survey record belonging to one of the selected BU's.
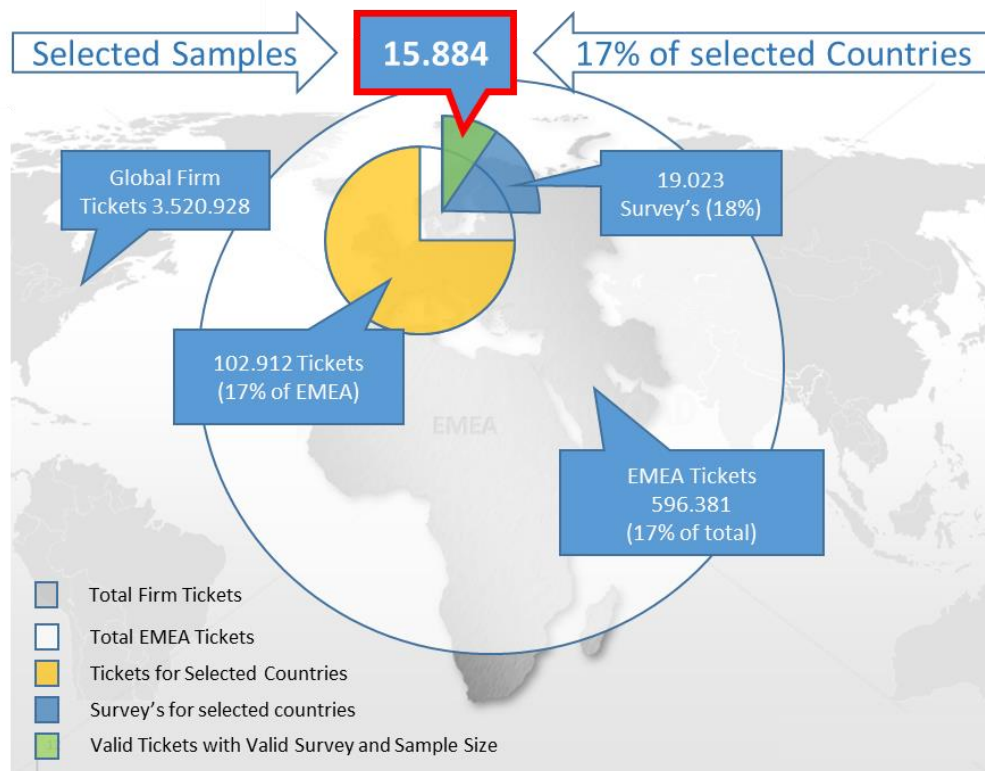
Figure 17- Sample proportion of Total and EMEA Population

The selected sample includes 4 countries and 22 business units varying by size and relational complexity. Figure 18 provides a visual representation of the sample, supported by Table 9**Error! Reference source not found.** that highlights some of the key statistics in relation to the selected countries and BU's. BU's are labelled based on the city they reside in. The response rate is provided to give an indication of how representable the used dataset is for the whole population of tickets handled for that Country/BU.

Figure 18 – Selected countries and business units for quasi-experiment

Table 9 - Overview of Sampled Business Units

Country	Business Unit	# Users	# Incidents	# Surveys Completed	Survey Response Rate
Germany	Ettlingen	203	1805	399	**22%**
	Hannover	909	7695	1489	19%
	Neustadt	337	2079	367	18%
	Wetzlar	229	1710	267	16%
	Wiesbaden	2347	28028	5270	19%
Ireland	Ballytivnan	295	1918	308	16%
	Clonmel	1220	7382	991	**13%**
	Cootehill	347	1614	171	11%
	Donegal	249	1274	259	20%
	Liffey Valley	481	2524	300	12%
	Longford	798	5352	485	9%
	Westport	71	866	126	15%
Netherlands	Breda	158	3991	520	13%
	Heerlen	174	1779	368	21%
	Hoofddorp	300	3686	353	**10%**
	Olst	535	3393	491	14%
	Weesp	853	8883	1749	20%
	Zwolle ALOG	306	3543	479	14%
	Zwolle ANSC	679	3762	499	13%
United Kingdom	Maidenhead	932	7546	1180	16%
	Sittingbourne	267	1214	207	17%
	Witney	784	3979	544	14%
Grand Total		12474	104023	16822	16%

5. RESULTS

This result section is broken down into three subsections. First the sample is analyzed based on its descriptive data. Then the simple main and interaction effects of ITO and relational maturity on proxies of BIA will be described. The interactions effects at various levels of observation will be reported on using ANOVA and pairwise comparisons. Finally, the relationship between BIA and ABS_PER shall be reported on looking for interaction effects within different cultural context.

5.1. DESCRIPTIVE DATA ANALYSES

The sample descriptive data, summarized in Table 10, shows the spread across subjects.

Table 10 - Sample Descriptive Data

	#Surveys per Group	Group 0				Group 1				
	Observation Phase	0	1	2	Total	0	1	2	1 Total	Total Surveys
Germany	Ettlingen	22	15	8	45	90	130	104	324	369
	Hannover	129	59	79	267	540	202	334	1076	1343
	Neustadt	6	10	33	49	115	73	112	300	349
	Wetzlar	17	4	16	37	51	55	95	201	238
	Wiesbaden	353	261	336	950	1633	883	1387	3903	4853
	Germany Total	**527**	**349**	**472**	**1348**	**2429**	**1343**	**2032**	**5804**	**7152**
Ireland	Ballytivnan	15	20	27	62	92	74	64	230	292
	Clonmel	175	56	51	282	252	210	214	676	958
	Cootehill	22	12	8	42	38	25	60	123	165
	Donegal	7	15	14	36	57	74	80	211	247
	Liffey Valley	27	12	37	76	60	62	88	210	286
	Longford	45	42	56	143	114	78	115	307	450
	Westport	3	19	19	41	13	26	40	79	120
	Ireland Total	**294**	**176**	**212**	**682**	**626**	**549**	**661**	**1836**	**2518**
Netherlands	Breda	222	20	52	294	73	37	68	178	472
	Heerlen	138	19	41	198	49	53	49	151	349
	Hoofddorp	68	9	14	91	106	53	71	230	321
	Olst	86	25	32	143	117	94	102	313	456
	Weesp	317	71	65	453	492	336	381	1209	1662
	Zwolle ALOG	97	24	45	166	136	60	91	287	453
	Zwolle ANSC	36	38	29	103	51	141	157	349	452
	Netherlands Total	**964**	**206**	**278**	**1448**	**1024**	**774**	**919**	**2717**	**4165**
United Kingdom	Maidenhead	51	67	19	137	482	236	253	971	1108
	Sittingbourne	16	3	9	28	76	52	41	169	197
	Witney	43	27	20	90	206	87	124	417	507
	United Kingdom Total	**110**	**97**	**48**	**255**	**764**	**375**	**418**	**1557**	**1812**
	Grand Total	**1895**	**828**	**1010**	**3733**	**4843**	**3041**	**4030**	**11914**	**15647**

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In total 15647 valid surveys were used in the analyses of this study. The sample contains relatively large inequality of sample size across groups. Unequal sample size reduces the comparability of groups, but also provides statistical power. The main groups are the Treatment Group and Experiment Phase. The treatment group is almost three time the size of the control group (3733 opposed to 11913). The sample size by phase varies from 3869 to 6738. 46% Of total surveys is related to a single country (Germany; 7152) of which 67% is a single BU (Wiesbaden; 3903). Large sample sizes reduce the problems of unequal sample sizes in analyses. But given the fact that the variation in sample size also exists on the business unit level, certain BU's will have greater statistical power in the effect on the dependent variables than other and smaller BU's. To account for these differences, the within and between BU comparison will be important to allow generalizability of conclusions.

5.2. HYPOTHESIS 1 & 2 - THE EFFECTS OF ITO ON CLIENT SATISFACTION AND IT PERFORMANCE

Hypothesis 1 and 2 will be tested simultaneously by assessing the short- and long-term effects of ITO. Short- and long-term effects are considered direct effects of ITO (H1A and H1B). The effects between the short- and long-term are considered as the moderated/matured effects (H2A, H2B).

A two-way (2*3) analyses of variance (ANOVA) was conducted examining the effects of ITO and relational maturity on client satisfaction and absolute supplier performance as proxies of BIA. The data analyzed are differences in means and standard deviation, unless reported differently. To test the assumptions of the two-way ANOVA, residuals were analyzed controlling for outliers, normality and homogeneity of variances. Outliers were checked for using boxplots, normality of groups was assessed using Shapiro-Wilk's normality test and homogeneity of variances was assessed using Levene's test. Outliers were analyzed and recategorized to improve normality of data. Residuals were tested to be normally distributed ($p < .05$). Levene's test failed to find homogeneity of variances ($p < .05$). While this is an important assumption of ANOVA it is not a requirement for being able to draw conclusions. It is an indication of significant differences in variances between groups, that can partially be explained by the unequal sample size of groups in combination with the preexisting differences between groups. To account for this missing assumption of homogeneity of variances and to enhance the validity of findings, a p-value of .005 will be used, rather than the standard .05 p-value. While arbitrarily chosen, it will enhance validity of effect sizes. Additionally, results are followed up using pair-wise tests to test simple main effects and focus on difference in differences between phases.

5.2.1. BETWEEN SUBJECT ANALYSES - MAIN AND INTERACTION EFFECTS

This section will report on the simple main effects of treatment group and experimental phase on the dependent variables client satisfaction and absolute performance. The results are illustrated in Figure 19.
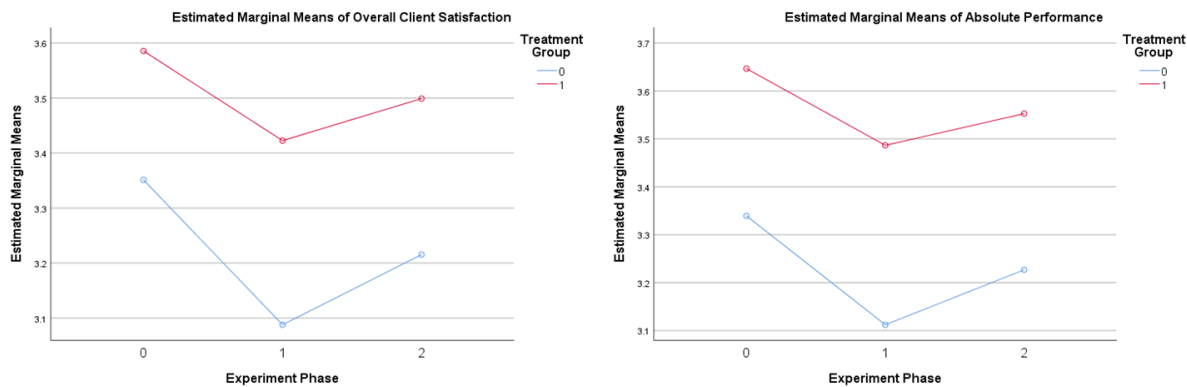
Figure 19 - Treatment Group and Phase differences over time

Both the control group (Group 0) and the treatment group (Group 1) show a similar reduction in client satisfaction and performance during the treatment phase (Phase 1), based on the effect size of estimated marginal means. Both groups show an increase in client satisfaction and performance between the treatment phase and the post hoc situation (Phase 2).

The test of between-subject variances, summarized in Table 11, shows that there is a significant direct relation ($p<0.005$) between the treatment group (ITO_TRT) the observations belong too, and the dependent variables of Client Satisfaction(CS_OVR) and Absolute Performance(ABS_PER). This direct relation is also seen for the observation phase ($p<=0.005$).

> **These p-values indicate that treatment groups are overall significantly different from each other and that the dependent variables behave differently over time.**

Table 11 - Tests of Between-Subjects Effects

Tests of Between-Subjects Effects		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Source							
Treatment Group	Overall Client Satisfaction	77.524	1	77.524	149.891	0.001	0.010
	Absolute Performance	108.202	1	108.202	195.519	0.001	0.012
Phase	Overall Client Satisfaction	27.133	2	13.567	26.231	0.001	0.003
	Absolute Performance	22.459	2	11.230	20.292	0.001	0.003
Treatment Group * Phase	Overall Client Satisfaction	1.495	2	0.747	1.445	0.236	0.000
	Absolute Performance	0.692	2	0.346	0.625	0.535	0.000
Business Unit	Overall Client Satisfaction	211.508	21	10.072	19.474	0.001	0.026
	Absolute Performance	66.444	21	3.164	5.717	0.001	0.008
Business Unit * Treatment Group * Phase	Overall Client Satisfaction	92.797	42	2.209	4.272	0.000	0.011
	Absolute Performance	75.801	42	1.805	3.261	0.000	0.009
a. R Squared = .084 (Adjusted R Squared = .076)							
b. R Squared = .070 (Adjusted R Squared = .062)							
c. Computed using alpha = .05							

Because the main research question is particularly interested in interorganizational relationships on a BU level in combination with the unequal sample size of BU's, the effects of the individual business unit were also tested for in the model. The effect size of the treatment group as well as the observation phase in relation to the client satisfaction and IT performance is relatively small ($\eta_p^2 < 0.02$). The business unit (BU) itself shows a statistical significant main effect on the dependent variables (p<0.001), that also has a significant effect size explaining more than 26% of variation ($\eta_p^2 < 0.26$).

> **Based on the analyses of main effects the differences between business units are deemed to be greater than differences between groups or observation phase.**

According to the between-subject variances, there was no significant interaction between treatment group and observation phase, but when BU is included as a factor, a statistical significant interaction can be seen between the three independent variables (BU*TR_GR*PHASE) in relation to the dependent variables (CS_OVR,p<0.001/PER_ABS,p<0.001).

> **This indicates that while the main differences are seen between BU's, the differences between treatments groups within BU's are significantly different over time.**

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5.2.2. WITHIN GROUP ANALYSES – PAIRWISE COMPARISON

Pairwise comparisons were performed between each observation phase to test the effect size of ITO on the short- and long-term (peri and post condition). p-Values are adjusted using Bonferroni to reduce the chances of obtaining false-positive results (type I errors) as a result of testing multiple hypothesis on a single dataset. This paragraph will provide an analysis of the test results.

The overall difference in estimated marginals mean between phases (Table 12) shows a significant negative effect of outsourcing on the short-term client satisfaction (Group 0, -.263, p<.001 / Group 1, -.163, p<.001) and IT performance (Group 0, -.227, p<.001 / Group 1, -.16, p<.001). The hypothesized maturation effect is seen for both groups and dependent variables. Performance and client satisfaction increases between the Post and Peri situation with significance levels <.05, but based on the chosen significance level of 0.005 it can't be called significant. Looking at the long-term effects, both groups seem to score significantly lower on the dependent variables in the post-hoc situation then they did pretests (CS_OVR; Group 0, -.136, p<.001 / Group 1, -.087, p<.001) (PER_ABS; Group 0, -.113, p<.001 / Group 1, -.094, p<.001).

Table 12 - Overall Pairwise Comparisons

Dependent Variable	Test (I & J)		Treatment Group						Diff in Diff
			0			1			
			Mean Diff (I-J)	Std. Error	Sig.b	Mean Diff (I-J)	Std. Error	Sig.b	Group 1 - Group 2
Overall Client Satisfaction	Peri	Pre	-.263*	0.053	0.000	-.163*	0.026	0.000	-0.100
	Post	Peri	0.128	0.052	0.044	0.076	0.025	0.006	-0.051
	Post	Pre	-0.136	0.048	0.013	-.087*	0.024	0.001	-0.049
Absolute Performance	Peri	Pre	-.227*	0.055	0.000	-.160*	0.027	0.000	-0.067
	Post	Peri	0.115	0.054	0.101	0.066	0.025	0.028	-0.048
	Post	Pre	-0.113	0.049	0.068	-.094*	0.025	0.001	-0.019
Based on estimated marginal means									
*. The mean difference is significant at the .005 level.									
b. Adjustment for multiple comparisons: Bonferroni.									

Interesting about these findings is the fact that literally all hypothesized within-group effects are larger for the control group then for the treatment group. This difference in within-group differences is reflected in the difference-in-difference score shown in Table 12. The difference-in-difference was calculated by extracting the within group mean differences from each other (I-J)- (I-J).

The pairwise comparisons and the analyses provided above, support the following statements about the hypothesis;

H1 – ITO has a negative short (Pre-Peri) and Long-term (Pre-Post) effect on IT performance & Client Satisfaction

H2 – Relational maturation has a negatively moderating effect on negative effects of ITO on IT performance & Client Satisfaction (Peri-Post)

5.2.3. BETWEEN GROUP ANALYSES - DIFFERENCE IN DIFFERENCES

To test the significance of these difference between groups over time, these pairwise comparisons were also modelled as a regression. The linear regression model does not use the estimated marginal means. Instead it uses actual group means and controls for the differences between and within BU 's over time. The results of the analyses are show in Table 13. The test variables (Phase 0-1, Phase 1-2, Phase 0-2) represents the offset (β) between the within control group difference and the within treatment group difference.

Table 13 - Regression; Significance in difference in differences

Coefficients – Short Term Effects							
Dependent Variable	Model		Unstandardized Coefficients		Standardized Coefficients		t	Sig.
			B	Std. Error	Beta			
Client Satisfaction	1	(Constant)	3.541	0.008			417.461	0.000
		Phase 0-1	-0.099	0.016	-0.060		-6.239	0.000
Absolute Performance	1	(Constant)	3.543	0.009			402.396	0.000
		Phase 0-1	-0.069	0.016	-0.041		-4.190	0.000

Coefficients – Maturation Effects							
Dependent Variable	Model		Unstandardized Coefficients		Standardized Coefficients		t	Sig.
			B	Std. Error	Beta			
Client Satisfaction	1	(Constant)	3.368	0.011			296.892	0.000
		Phase 1-2	0.150	0.017	0.094		8.867	0.000
Absolute Performance	1	(Constant)	3.382	0.012			293.622	0.000
		Phase 1-2	0.208	0.017	0.128		12.162	0.000

Coefficients – Long Term Effects							
Dependent Variable	Model		Unstandardized Coefficients		Standardized Coefficients		t	Sig.
			B	Std. Error	Beta			
Client Satisfaction	1	(Constant)	3.545	0.008			436.441	0.000
		Phase 0-2	-0.027	0.014	-0.018		-1.974	0.048
Absolute Performance	1	(Constant)	3.548	0.008			425.861	0.000
		Phase 0-2	0.043	0.014	0.028		3.003	0.003

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Analyzing the short-term effects section shows that the within control group effect was significantly larger than the effect size within the treatment group (CS_OVR; β=-.099, PER_ABS; β=--.069, p<0.001). For the maturation effects, the within treatment group effect size was significantly larger than the within control group effect (CS_OVR; β=.015, PER_ABS; β=.208, p<0.001). The long-term effects of outsourcing indicate a significantly smaller effect size for the treatment group as opposed to the control group as it comes to client satisfaction (β=-.027, p=.048), while in fact the absolute performance within the treatment group was less effected by outsourcing on the long run (β=.043, p=.003).

5.2.4. DEEP DIVE ON A BUSINESS UNIT LEVEL

Because the largest effect on the overall test of between-subject variances (Table 11) was explained by the differences between BU's, this section will provide a more thorough analysis of the effects of ITO and relational maturation on client satisfaction and IT performance on a BU level. Pairwise comparisons were performed within each BU to tests the effects on both treatment and control group.

Figure 20 illustrates how BU's differ over time based on the estimated marginal means. Both dependent variables show different base values (y-axis) for each BU (x-axis), as well as different behavior over time (lines). Similar as for the overall findings, the majority of BU's supports the idea that the overall client satisfaction and IT performance dropped between phase 0 and phase 1 and recovered from phase 1 to phase 2.
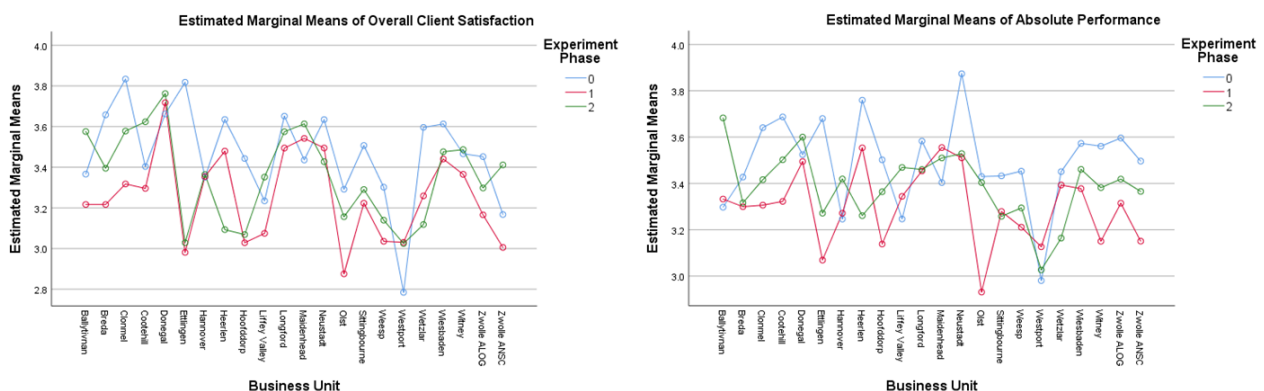
Figure 20 - Differences between Business Units over Time

The individual within- and between-group tests per BU can be found in Appendix IV - . A summary is provided here.

As summarized in Table 14, 19 out of 22 BU's showed that both client satisfaction and IT performance were negatively impacted on the short term. Equally, it can be concluded that 16 BU's also showed a long-term effect on client satisfaction and IT performance. Remarkably, only half of these cases showed a greater effect within the treatment group then the effects within the control group. As a result, respectively only 8 out of 22 cases (36%) really supports the hypothesized short-term effects. 10 Out of 22(45%) cases support the hypothesized effects of relational maturation and 7 out of 22 cases (31%) supports the hypothesized long-term effects.

Table 14 - Summary Table on BU results from Hypothesis Testing

Tested Hypothesis	BU's effected as expected		Treatment effects confirmed by Control Group effects	
	(1A) Client Satisfaction	(1B) IT Performance	Client Satisfaction	IT Performance
H1 - ITO has Short-Term negative effect on BIA	19	19	8	8
H1 - ITO has Long-Term negative effect on BIA	16	17	9	7
H2 - Relational Maturity has a negatively moderating effect on the negative effects of ITO on BIA	17	16	7	10

Total Number of BU's tested; 22

Based on the analyses of the estimated marginal group means for each BU, it appears that even though the hypothesized effects are witnessed within the BU, these findings are not supported by comparing these effects to the control groups within that BU. To conclude on the above;

The analyses of within BU effects is somewhat undecisive on the effects of ITO and relational maturity on the BIA as the effects were larger for the control group then for the treatment group.

5.3.   HYPOTHESIS 3 - THE RELATION BETWEEN CLIENT SATISFACTION AND ABSOLUTE PERFORMANCE

The second part of this analyses, shall focus on the relation between IT performance and client satisfaction (Hypothesis 3). This study hypnotizes that the two relate (H3A), that the relation between the two improves over time (H3B) and that it can be explained by cultural context and reciprocal effects (H3C). To test the relation between IT performance and client satisfaction, absolute performance was modelled as an independent variable for the dependent variable of client satisfaction.

The interaction effects of treatment and time were tested to see how they would effect the relation between the two dependent variables. These results are illustrated in Figure 21 and show a similar pattern as the prior measurement of client satisfaction and IT performance individually. In general, the services in the treatment group (Group 1) are appreciated slightly more positive then the services in the control group (Group 0). Equally the overall appreciation of services pre- outsourcing was slightly higher than the services performed during the peri and post phases of the quasi-experiment. Indicating a possible small bias in the client satisfaction between phases.
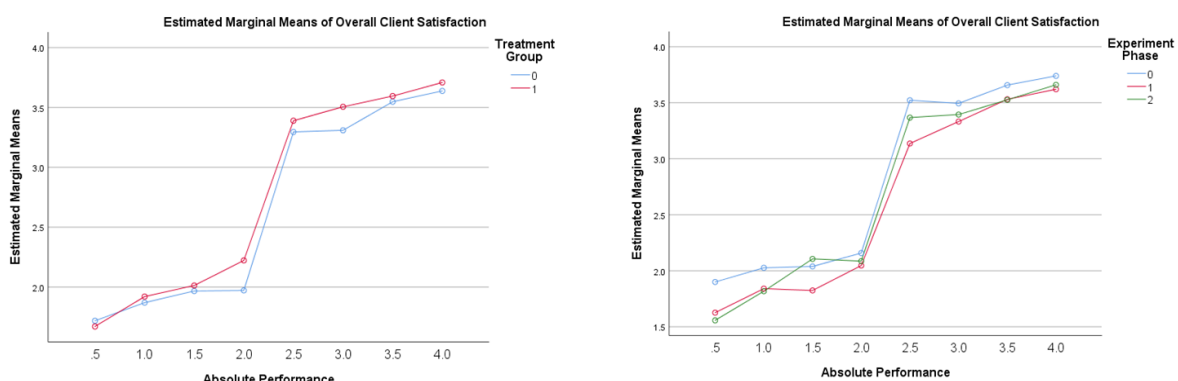
Figure 21 - The appreciation of IT Performance between groups over time

The analyses of the between subject effects, listed in Table 15, shows that client satisfaction is best predicted by Absolute Performance (p<0.001, η_p^2 =.245).

H3A - These findings support the hypothesis that there is a positive relation between IT performance and client satisfaction

Table 15 - Testing the Relation between CS_OVRL and PER_ABS

Tests of Between-Subjects Effects						
Dependent Variable: Overall Client Satisfaction						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	3759.190[a]	119	31.590	98.134	0.000	.429
Intercept	8708.040	1	8708.040	27051.524	0.000	.635
Absolute Performance	1623.286	7	231.898	720.391	0.000	.245
Treatment Group * Absolute Performance	19.683	8	2.460	7.643	0.000	.004
Observation Phase * Absolute Performance	52.552	16	3.285	10.203	0.000	.010
Treatment Group * Observation Phase * Absolute Performance	13.457	16	0.841	2.613	0.000	.003
Country * Absolute Performance	132.638	24	5.527	17.168	0.000	.026
Observation Phase * Country * Absolute Performance	23.645	48	0.493	1.530	0.011	.005
Error	4997.908	15526	0.322			
Total	200380.000	15646				
Corrected Total	8757.098	15645				
a. R Squared = .429 (Adjusted R Squared = .425)						

Relatively small (η_p^2 <.02), but significant effect sizes (p<.001) are seen for the treatment group and observation phase.

H3B - This is an indication that the appreciation of services changes after outsourcing as well as over time, but the effect is small

No significant relation was found between cultural indexes and the relationship between IT performance and client satisfaction. This can partially be explained by the fact that all four sampled countries were part of the same quartile of the cultural index scales used for this study. To still try and find evidence of a cultural client satisfaction bias, country was also added to the model. The effects size of country is relatively small (η_p^2 =.005) and not significant (p>.005) when accounting for the effects of treatment and maturation.

These non-significant longitudinal effects are likely to be explained by unforeseen and uncontrolled for variables and in combination with the failed tests for homogeneity, there is insufficient statistical power to conclude on the effects of cultural differences on the client satisfaction bias. The non-significant longitudinal effects could be explained by unforeseen and uncontrolled for variables, making it unreasonable to draw conclusions on it.

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As an FYI, the differences between countries are illustrated in Figure 22. A possible interpretation of this graph could be that British clients are less troubled by lower absolute performance then the other tested countries and that the Dutch are less impressed by high levels of absolute performance. Equally, the British clients appear to be more constant in their appreciation of performance then the other countries, as they show less of a leap a performance level of 2 to 2.5. But, as mentioned under this section these estimated effects can be the result of too many different variables.
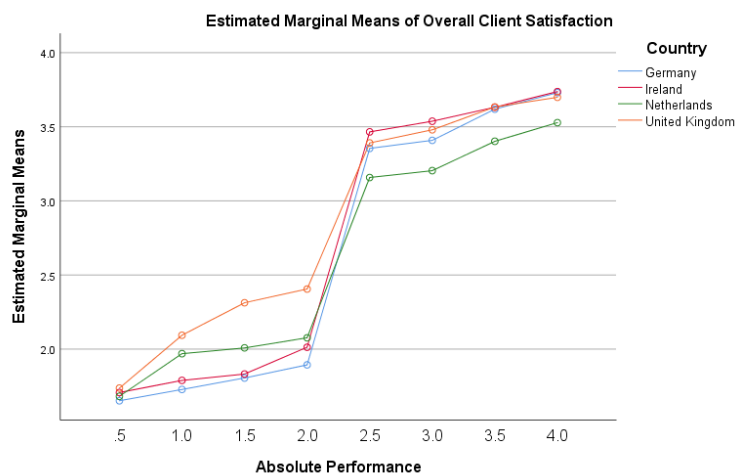
Figure 22 - Country differences in appreciation of IT performance

6. CONCLUSIONS

This section will reflect on the results of this study to rationalize conclusions and provide an answer to the main research question of this thesis;

How does IT Outsourcing impact the development of relational interaction between clients and IT suppliers over time on a business unit level?

In addition, this section will provide a critical reflection on the research itself and the implication it's may have for practice and future research.

6.1. THE EFFECTS OF ITO AND RELATIONAL MATURITY ON BIA

To answer the main research question, this study has defined hypotheses about how ITO is expected to effect proxies of BIA. The proxies used were Client Satisfaction and IT Performance. These dependent variables were studied looking for immediate and long-term effects, to see if and how the relational interaction develops during and after outsourcing IT services. The following hypothesis were verified using a quasi-experimental method, using longitudinal field data;

Hypothesis 1	**ITO has a negative effect on BIA on an operational level**
Hypothesis 2	**Relational maturity has a negative moderating effect on the impact of ITO on BIA**
Hypothesis 3A	**Improved absolute performance results in improved satisfaction**
Hypothesis 3B	**Relational maturity has a positively moderating effect on the relation**
Hypothesis 3C	**Cultural factors have a moderating (?) effect on the relation between client**

Each hypothesis shall be discussed individually before providing a general conclusion about the main hypothesis. While the formal Delphi study planned for this conclusion section did not commence, results were discussed with the IT director for the EMEA region, BU leaders and a variety of clients to test the reliability of findings and create a better understanding of what the results mean. These insights will be incorporated in this conclusion and discussion section to enhance the interpretation of results.

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6.1.1. HYPOTHESIS 1 - ITO HAS A NEGATIVE EFFECT ON BIA ON AN OPERATIONAL LEVEL

The first and main hypothesis, was adopted from Derksen (2013) whole failed to find supporting evidence that there is a negative effect of ITO on BIA. To test this hypothesis, this study focused on client satisfaction and IT performance as proxies of BIA. The results show a significant impact of outsourcing on client satisfaction and IT performance. Both client satisfaction and IT performance show a significant decrease from the pre-outsourcing phase to the peri- and post-outsourcing phase. The decrease in client satisfaction and IT performance was seen for both the treatment and the control group. The short-term effects were more significant than the long-term effects and the effects were larger for the control group than for the treatment group. Additional detail is provided in Appendix V - where the treatment groups are compared to a third treatment group of prior outsourced services.

Differences in performance and satisfaction over time were to a large extend explained by the type of services and the BU in question, rather than the provider of the IT services. This is an indicating of significant differences in how the interorganizational relationships on BU level are impacted by the event of outsourcing. These differences can partially be explained by differences in client capabilitites, such as vendor management skills, but also relational governance skills such as effective knowledge sharing, trust and communication (Lacity, Willcocks, & Khan, 2011)

 A detailed analysis on a BU level provided additional support for the hypothesis. When testing for short term effects, 19 Out 22 tested BU's failed to reject the hypothesis of ITO having a negative effect on BIA. When testing for long-term effects, both client satisfaction and IT performance were tested to be significantly lower in the post hoc situation than they were in the pre-outsourcing phase for 16 out of 22 BU's. These replicated results largely enhance the reliability and generalizability of findings.

> **Based on these supportive findings for hypothesis 1A and 1B, the hypothesis that ITO has a negative effect on the level of BIA on an operational level is supported.**

6.1.2. HYPOTHESIS 2 – THE EFFECT OF RELATIONAL MATURITY ON THE IMPACT OF ITO ON BIA

The process of BIA is a process of relational maturation (Derksen, 2013) and as a result is supposed to improve both the intra- and inter-organizational relationships. These expectations are rooted in social exchange theory and supported by the ITO Maturity model provided by Gottschalk and Solli-Sæther (2006). The results show that that there was a significant improvement of the client satisfaction and IT performance between the transitioning phase and the post hoc situation for both the treatment and control group.

This improvement (difference) was tested to be significantly larger than the improvement for the control group between these phases. This matches the hypnotized result, based on the assumption that the new interorganizational relationships mature over time as the result of repeated social exchange between parties by Sing & Dyer (1998), while the intra-organizational relationships were not significantly impacted by outsourcing and already relatively mature.

Based on these supportive findings for hypothesis 2A and 2B the hypothesis that relational maturity has a negative moderating effect on the effects of ITO on BIA is supported.

6.1.3. HYPOTHESIS 3 - IMPROVED PERFORMANCE RESULTS IN IMPROVED SATISFACTION

The results show there is a strong linear relation between IT performance and client satisfaction that slowly improves over time. This means that when performance constantly improves over time, client satisfaction seems to increasingly improve with it. This may indicate a less biased or positively biased response or even the glimpse of a reciprocal effect as suggested by Han H.-S. , Lee, Chun, & Seo(2013).

Although the effect-sizes are small, the hypothesis of 3A and 3B are supported by the findings in this study.

This study failed to find any significant data supporting the cultural bias in client satisfaction as hypothesized by Ribbers & Beulen (2003). There for hypothesis 3C must be rejected.

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6.1.4. ALIGNMENT IN IT OUTSOURCING - THE POST-HOC MODEL

The post hoc model illustrated below shows all supported hypothesis marked in green and the rejected hypotheses in red. With the exception of the cultural satisfaction bias, all hypotheses were confirmed with statistical significance.
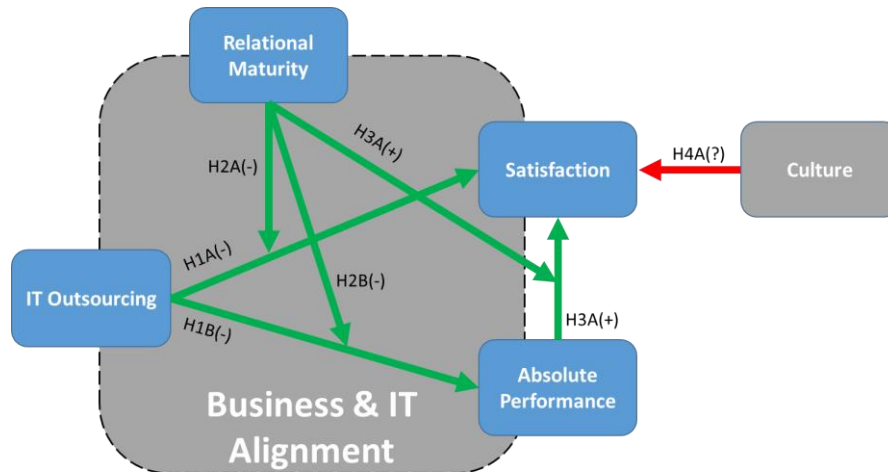
Figure 23 - Post-Hoc Conceptual Model

The overall conclusion being that ITO has negative short- and long-term effects on BIA, but the effects are negatively moderated by relational maturity. The effects of ITO on BIA are deemed larger for the intra-organizational interaction then for the interorganizational interaction.

6.2.   RESEARCH LIMITATIONS

The research was conducted within my own organization, and even though I knew nothing about the business units being studied, my conclusions may be biased because I know the company itself. Positive about this was that it allowed me a faster and deeper understanding of the organizational context and access to data, others would not have access to.

The main limitation of this research is the limitation of internal validity that any quasi-experiment deals with. Especially when studying 22 BU's over a period of 3 years, there could be many causal effects that may or may not be controlled for as part of the design. Seeing the same outcomes for such a significant number of BU's does help building the confidence that that there are causal effects of ITO. Yet, measuring the actual effect size and finding a reliable explanation for such an effect seemed an impossible task.

This was even more enforced by the unequal sample sizes and lacking homogeneity of variances, which created challenges for the analyses of the enquired data, calling for within case analyses and conservative conclusions and interpretation of effect sizes.

Before performing this quasi-experimental study, my expectations about the outcome were rather biased in thinking that the outsourcing would have a significant effect size on the level of BIA within the business units of the studied firm. But differences in performance and satisfaction over time were best explained by the type of services and the BU in question, rather than the provider of the IT services. The most unexpected finding from this quasi-experiment was the fact that the theoretically retained IT relationships in the control group were impacted more by the outsourcing of IT, then the treatment group itself.

After review of the results with some of the firm's IT and BU leaders, three main reasons for this effect were identified. First, some countries (United Kingdom and Ireland) were less impacted than others, because the local IT staff was transitioned, rather than replaced by the new supplier. As a result, interpersonal trust was retained and the interorganizational relationships for these countries were less (yet still significantly) impacted by the event of outsourcing. Second and in parallel to outsourcing, the retained inhouse IT organization was reorganized and centralized. This resulted in the loss of implicit business knowledge due to layoffs and a larger distance (gap) between business clients and IT service providers. The outsourced services are considered generic services that require little firm-specific knowledge or knowledge about individual BU's. But where clients and IT service providers used to have direct relationships based on social contracts, they now rely more on their capability to manage the relationships and service delivery through more formal and contractual governance structures. Subsequently, it may be expected that the performance related to the retained services is more impacted than the outsourced services. Third and final, is the possibility of a cascading effect of outsourcing the support desk. The support desk is responsible for assigning a ticket to the right IT service provider and mediating between parties. The level of implicit knowledge embedded in the client-supplier relationships prior to outsourcing was deemed to be higher. If these relationships are misfunctioning and the task of the service desk is performed inefficient, this may have a direct effect on both performance of IT as well as the client satisfaction about the services. For this study it was not possible to distinguish between these type of services, based on the available data.

Whether the effects of centralization should be seen as an effect of ITO is questionable. Fact is that it was triggered by outsourcing and that the negative effects seem more significant than the effects of outsourcing

by itself. The effect of too much outsourcing or outsourcing the wrong services is described in various studies, that call for just-right (Aron, Clemons, & Reddi, 2005) and selective outsourcing (Beulen, 2011).

Another limitation or challenge for this study, was the availability of data. During the initial design, it was emphasized that various measures of relational interaction would be available through the ITSM system. This data included the number of bounces between the service desk, IT departments and clients as well as the handling times per incident and department. Eventually, it turned out that this data was only maintained for the current calendar year and new measures of performance had to be defined. The recommendation was made to the firm's IT organization to enhance their historical logging to retain this valid information outside of the current scope.

Given the objectives of this study to test the effects of cultural aspects on the relationship between absolute performance and client satisfaction, the case selection and sampling process was inadequate. To allow conclusions about cultural differences, the sampling should have focused on achieving a diverse set of countries rather than BU's. The six initially selected countries were further reduced during the analyses phase when the two Scandinavian countries (Norway and Denmark) were excluded due to not providing a valid sample for testing. The four remaining countries were too homogeneous to test for the effects of cultural differences (all scored to be the same categorical scale). On the other hand, this close relatedness of BU's does allow better generalizability of findings about the already significant differences between BU's.

Finally, discussing the findings from this study with almost any stakeholder in the firm, found that they did not recognize their expectation in the findings. At the same time, they recognized that they were not aware of performance of IT at all in the first place and often did not use the surveys to score the IT services properly. People either answered that they only use the survey to express when they are satisfied, or they used it only to express they were dissatisfied. When people only respond to a survey based on such negative or positive bias', this doesn't classify as 'standard error' anymore. This bias may lead to invalid record of performance in relation to services. A proposed solution and improvement to the current BIA processes of the studied firm, was the implementation of an annual BIA survey among business clients and IT service providers. This way the alignment and satisfaction outside of the context of an individual interaction can be tested. This also allows IT to collect richer information from a survey as well as comparing it to the performance of the client in the eyes of IT.

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Two more remarks about the survey seem worthwhile mentioning here. First, the different questions do not test to be significantly different. This is confirmed by the factor analyses that is only able to extract a single component form the answers. Additionally, the answers are averaged rather than evaluated per question. This does not add any value, as the average will not reveal the contribution of any of the individual answers in relation to the score. Second, is the fact that the questions use a scale of 4. This restricts the degrees of freedom in the choice one makes. By using a scale of 4 categories, persons who see both positive and negative aspects of their perceptions are forced to lean either towards the positive or the negative; "Neutral - neither positive nor negative" would give them an option they feel comfortable with. The recommendation made, was for the firm to reassess the questions and the allowed degrees of freedom, as well as the process of evaluation the results.

6.3.   IMPLICATIONS FOR AND PRACTICE

The findings from this study provide multiple implications for both practice and theory. First of all, this study adds to literature by concludes that ITO has a negative effect on the level of BIA in large firms. These contributions are useful as the field has been relatively undecided so far (Schlosser, Weitzel, Wagner, & Beimborn, 2010) and has been lacking longitudinal field data.

Secondly, it also shows how the effects of ITO may be very different on a BU level. As a result, the local culture and capabilities present at BU's should be looked at with more caution when outsourcing IT services. While interorganizational trust is deemed to be stronger than the interpersonal trust (Zaheer, McEvily, & Perrone, 1998), the interaction between a whole BU and the IT service provider is often through a single point of contact in the form of a support desk or local IT person.

This thesis provides evidence of high statistical power that the relation between absolute performance and client satisfaction is hardly affected by outsourcing, so noises about poor performance should not be expected to be and irrational result of ITO. In contrary, it should be taken seriously as it is probably related to an actual poor performing relationship.

Finally, this study provides reasons to rethink centralizing IT as part of outsourcing IT services. Perhaps firms would be less impacted by outsourcing IT services after they have reorganized their IT organization, allowing better contracting and relational governance.

6.4.   FUTURE RESEARCH

As mentioned in the research limitations, the findings from this study may be very biased due to the response (or no-response) bias embedded in the survey's. It would be interesting to see how the BU's from the studied firm (or another firm) would appreciate the IT services when asked explicitly out of the context of single service exchange. Comparing these results with the findings from this study could share insights into the representativeness of such data collection methods.

In addition, it would be very interesting (based on the outcomes of the previous assessment) to extend the study to include all other BU's in the firm (or select a diversity of BU's from another company). This way the cultural differences could be studied with more statistical power. Again, comparing the results with a standalone assessment on this scale would be very interesting.

This study has shown a strong support for the hypothesis that ITO has a negative impact on BIA, based on data from a firm, two years into its outsourcing relationship. It would be interesting to see how these effects would be measured up after 3 or even 5 years, to allow a more decisive conclusion on the long-term effects of ITO on BIA.

And finally, the results of the study highlight a strong correlation between centralization of IT services and BIA. While this may often be a side effect of ITO, it would be interesting to understand is there are significant differences in the effects of ITO on BIA between firms that have centralized IT and firms that have not.

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APPENDIXES

APPENDIX I - ITSM CUSTOMER SATISFACTION SURVEY

APPENDIX II - BUSINESS UNIT CHARACTERISCTICS PER EXPERIMENT PHASE

Business Unit	Experiment Phase	#Users	# Incidents	Response Rate	First Line Resolution Rate	Incidents per Client	IT Presence
Ballytivnan	0	174	744	15%	56%	4.28	1%
Ballytivnan	1	207	744	13%	48%	3.59	0%
Ballytivnan	2	108	419	23%	52%	3.88	2%
Breda	0	132	2458	12%	31%	18.62	11%
Breda	1	88	722	9%	53%	8.20	13%
Breda	2	65	752	19%	54%	11.57	8%
Clonmel	0	682	2901	15%	50%	4.25	0%
Clonmel	1	631	2114	13%	36%	3.35	5%
Clonmel	2	754	2274	12%	52%	3.02	5%
Cootehill	0	189	596	11%	62%	3.15	1%
Cootehill	1	189	434	9%	55%	2.30	1%
Cootehill	2	189	505	13%	53%	2.67	1%
Copenhagen	0	44	106	21%	51%	2.41	5%
Copenhagen	1	38	129	17%	46%	3.39	8%
Copenhagen	2	38	197	39%	55%	5.18	3%
Donegal	0	123	426	16%	66%	3.46	1%
Donegal	1	146	369	25%	53%	2.53	3%
Donegal	2	167	463	21%	63%	2.77	1%
Ettlingen	0	138	479	24%	36%	3.47	1%
Ettlingen	1	129	639	25%	44%	4.95	2%
Ettlingen	2	129	664	19%	42%	5.15	2%
Hannover	0	731	4204	17%	55%	5.75	4%
Hannover	1	544	1835	17%	44%	3.37	5%
Hannover	2	323	1452	31%	49%	4.50	4%
Heerlen	0	96	826	24%	54%	8.60	4%
Heerlen	1	98	507	15%	50%	5.17	4%
Heerlen	2	107	388	24%	35%	3.63	5%
Hoofddorp	0	242	2114	9%	38%	8.74	2%
Hoofddorp	1	114	662	11%	39%	5.81	4%
Hoofddorp	2	113	880	11%	32%	7.79	4%
Liffey Valley	0	292	717	13%	36%	2.46	0%
Liffey Valley	1	259	786	10%	34%	3.03	2%
Liffey Valley	2	206	938	14%	30%	4.55	3%
Longford	0	316	1305	13%	55%	4.13	1%
Longford	1	441	1494	9%	43%	3.39	2%
Longford	2	587	2180	8%	44%	3.71	1%
Maidenhead	0	666	3481	16%	50%	5.23	0%

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Business Unit	Experiment Phase	#Users	# Incidents	Response Rate	First Line Resolution Rate	Incidents per Client	IT Presence
Maidenhead	1	418	1916	17%	36%	4.58	2%
Maidenhead	2	439	1939	15%	52%	4.42	1%
Neustadt	0	186	562	22%	59%	3.02	2%
Neustadt	1	223	622	14%	55%	2.79	1%
Neustadt	2	246	885	17%	39%	3.60	0%
Olst	0	320	1316	17%	34%	4.11	0%
Olst	1	292	821	15%	35%	2.81	2%
Olst	2	318	1012	14%	45%	3.18	1%
Oslo	0	83	505	11%	88%	6.08	2%
Oslo	1	52	196	12%	60%	3.77	4%
Oslo	2	39	164	32%	48%	4.21	8%
Sittingbourne	0	190	580	16%	52%	3.05	2%
Sittingbourne	1	117	293	19%	64%	2.50	2%
Sittingbourne	2	96	286	20%	53%	2.98	3%
Weesp	0	603	4084	21%	36%	6.77	3%
Weesp	1	532	2251	19%	39%	4.23	2%
Weesp	2	486	2327	20%	49%	4.79	3%
Westport	0	34	118	14%	25%	3.47	3%
Westport	1	57	390	13%	27%	6.84	2%
Westport	2	46	340	17%	31%	7.39	2%
Wetzlar	0	149	620	13%	50%	4.16	1%
Wetzlar	1	133	477	14%	49%	3.59	1%
Wetzlar	2	144	599	20%	52%	4.16	1%
Wiesbaden	0	1692	11457	19%	59%	6.77	3%
Wiesbaden	1	1597	7466	17%	43%	4.68	3%
Wiesbaden	2	1580	8899	21%	46%	5.63	3%
Witney	0	471	1708	15%	48%	3.63	1%
Witney	1	451	1038	12%	43%	2.30	2%
Witney	2	429	1008	16%	55%	2.35	1%
Zwolle ALOG	0	235	1857	13%	37%	7.90	4%
Zwolle ALOG	1	176	743	12%	39%	4.22	3%
Zwolle ALOG	2	156	888	16%	36%	5.69	2%
Zwolle ANSC	0	247	732	13%	45%	2.96	1%
Zwolle ANSC	1	444	1385	15%	37%	3.12	1%
Zwolle ANSC	2	457	1524	13%	46%	3.33	1%

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APPENDIX III - RELATIONAL COMPLEXITY PER EXPERIMENT PHASE

Business Unit	Experiment Phase	Treatment Group	Relational Maturity	Relations Level_1	Relations Level_2	Relations Overall	# Incidents	Incidents /Relation
Ballytivnan	0	0	1	14	14	14	15	1.1
Ballytivnan	0	1	3	46	41	51	92	1.8
Ballytivnan	1	0	2	18	20	20	20	1.0
Ballytivnan	1	1	3	67	57	69	74	1.1
Ballytivnan	2	0	3	18	18	21	27	1.3
Ballytivnan	2	1	3	51	40	53	66	1.2
Breda	0	0	1	38	47	56	224	4.0
Breda	0	1	3	36	17	37	75	2.0
Breda	1	0	2	12	13	13	20	1.5
Breda	1	1	3	16	27	32	38	1.2
Breda	2	0	3	20	24	27	53	2.0
Breda	2	1	3	12	43	44	75	1.7
Clonmel	0	0	1	62	64	67	178	2.7
Clonmel	0	1	3	208	99	229	254	1.1
Clonmel	1	0	2	54	55	55	56	1.0
Clonmel	1	1	3	201	144	208	212	1.0
Clonmel	2	0	3	51	49	51	51	1.0
Clonmel	2	1	3	195	119	202	216	1.1
Cootehill	0	0	1	20	21	22	22	1.0
Cootehill	0	1	3	39	25	39	39	1.0
Cootehill	1	0	2	12	12	12	12	1.0
Cootehill	1	1	3	26	24	26	26	1.0
Cootehill	2	0	3	8	8	8	8	1.0
Cootehill	2	1	3	57	44	58	59	1.0
Copenhagen	0	0	1	4	4	4	4	1.0
Copenhagen	0	1	3	18	14	18	18	1.0
Copenhagen	1	0	2	1	1	1	1	1.0
Copenhagen	1	1	3	20	18	20	20	1.0
Copenhagen	2	0	3	6	6	6	6	1.0
Copenhagen	2	1	3	56	45	58	62	1.1
Donegal	0	0	1	7	7	7	7	1.0
Donegal	0	1	3	48	19	48	58	1.2
Donegal	1	0	2	12	13	15	15	1.0
Donegal	1	1	3	43	31	51	76	1.5
Donegal	2	0	3	13	15	15	15	1.0
Donegal	2	1	3	54	31	61	80	1.3
Ettlingen	0	0	1	15	18	19	22	1.2

Business Unit	Experiment Phase	Treatment Group	Relational Maturity	Relations Level_1	Relations Level_2	Relations Overall	# Incidents	Incidents /Relation
Ettlingen	0	1	3	66	44	80	90	1.1
Ettlingen	1	0	2	16	14	16	16	1.0
Ettlingen	1	1	3	98	68	115	132	1.1
Ettlingen	2	0	3	8	8	9	9	1.0
Ettlingen	2	1	3	85	58	94	104	1.1
Hannover	0	0	1	93	94	102	133	1.3
Hannover	0	1	3	438	140	480	547	1.1
Hannover	1	0	2	58	56	60	61	1.0
Hannover	1	1	3	190	103	200	207	1.0
Hannover	2	0	3	75	67	78	81	1.0
Hannover	2	1	3	268	101	302	340	1.1
Heerlen	0	0	1	41	43	62	141	2.3
Heerlen	0	1	3	31	20	35	49	1.4
Heerlen	1	0	2	10	15	15	19	1.3
Heerlen	1	1	3	42	29	44	53	1.2
Heerlen	2	0	3	22	26	28	41	1.5
Heerlen	2	1	3	45	29	48	49	1.0
Hoofddorp	0	0	1	44	47	59	69	1.2
Hoofddorp	0	1	3	81	47	93	108	1.2
Hoofddorp	1	0	2	9	9	9	9	1.0
Hoofddorp	1	1	3	51	33	52	54	1.0
Hoofddorp	2	0	3	11	11	12	15	1.3
Hoofddorp	2	1	3	62	37	68	71	1.0
Liffey Valley	0	0	1	27	25	27	27	1.0
Liffey Valley	0	1	3	60	51	61	62	1.0
Liffey Valley	1	0	2	12	12	12	12	1.0
Liffey Valley	1	1	3	58	43	61	63	1.0
Liffey Valley	2	0	3	33	33	34	37	1.1
Liffey Valley	2	1	3	85	69	86	88	1.0
Longford	0	0	1	38	40	41	46	1.1
Longford	0	1	3	97	54	99	116	1.2
Longford	1	0	2	35	33	36	42	1.2
Longford	1	1	3	66	51	70	79	1.1
Longford	2	0	3	51	51	54	56	1.0
Longford	2	1	3	109	76	110	116	1.1
Maidenhead	0	0	1	48	54	54	54	1.0
Maidenhead	0	1	3	403	196	442	495	1.1
Maidenhead	1	0	2	25	36	38	68	1.8
Maidenhead	1	1	3	177	142	206	239	1.2

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Business Unit	Experiment Phase	Treatment Group	Relational Maturity	Relations Level_1	Relations Level_2	Relations Overall	# Incidents	Incidents /Relation
Maidenhead	2	0	3	16	16	16	20	1.3
Maidenhead	2	1	3	232	130	238	254	1.1
Neustadt	0	0	1	6	6	6	6	1.0
Neustadt	0	1	3	100	30	104	116	1.1
Neustadt	1	0	2	10	10	10	10	1.0
Neustadt	1	1	3	70	40	71	74	1.0
Neustadt	2	0	3	32	32	33	35	1.1
Neustadt	2	1	3	97	40	103	113	1.1
Olst	0	0	1	75	65	81	89	1.1
Olst	0	1	3	105	40	108	119	1.1
Olst	1	0	2	25	24	25	25	1.0
Olst	1	1	3	87	53	91	95	1.0
Olst	2	0	3	31	25	31	32	1.0
Olst	2	1	3	86	57	98	102	1.0
Oslo	0	0	1	4	4	4	5	1.3
Oslo	0	1	3	30	9	31	49	1.6
Oslo	1	0	2	1	1	1	1	1.0
Oslo	1	1	3	20	16	20	21	1.1
Oslo	2	0	3	2	2	2	2	1.0
Oslo	2	1	3	42	35	43	50	1.2
Sittingbourne	0	0	1	16	16	16	16	1.0
Sittingbourne	0	1	3	67	48	69	76	1.1
Sittingbourne	1	0	2	3	3	3	3	1.0
Sittingbourne	1	1	3	44	34	46	52	1.1
Sittingbourne	2	0	3	8	8	8	9	1.1
Sittingbourne	2	1	3	42	31	42	43	1.0
Weesp	0	0	1	238	188	293	322	1.1
Weesp	0	1	3	363	99	401	495	1.2
Weesp	1	0	2	66	66	70	72	1.0
Weesp	1	1	3	294	130	321	346	1.1
Weesp	2	0	3	62	60	64	66	1.0
Weesp	2	1	3	303	128	343	389	1.1
Westport	0	0	1	3	3	3	3	1.0
Westport	0	1	3	10	10	11	13	1.2
Westport	1	0	2	17	19	19	19	1.0
Westport	1	1	3	25	24	25	28	1.1
Westport	2	0	3	18	19	19	19	1.0
Westport	2	1	3	39	36	39	40	1.0
Wetzlar	0	0	1	15	14	17	17	1.0

Business Unit	Experiment Phase	Treatment Group	Relational Maturity	Relations Level_1	Relations Level_2	Relations Overall	# Incidents	Incidents /Relation
Wetzlar	0	1	3	49	32	52	54	1.0
Wetzlar	1	0	2	4	4	4	4	1.0
Wetzlar	1	1	3	49	35	50	55	1.1
Wetzlar	2	0	3	17	17	17	17	1.0
Wetzlar	2	1	3	85	51	92	98	1.1
Wiesbaden	0	0	1	235	218	274	363	1.3
Wiesbaden	0	1	3	1250	344	1432	1655	1.2
Wiesbaden	1	0	2	195	180	223	266	1.2
Wiesbaden	1	1	3	784	324	846	899	1.1
Wiesbaden	2	0	3	258	221	279	339	1.2
Wiesbaden	2	1	3	1125	341	1270	1415	1.1
Witney	0	0	1	42	37	43	43	1.0
Witney	0	1	3	191	101	202	209	1.0
Witney	1	0	2	28	28	28	28	1.0
Witney	1	1	3	88	74	89	89	1.0
Witney	2	0	3	22	18	22	22	1.0
Witney	2	1	3	122	81	123	128	1.0
Zwolle ALOG	0	0	1	82	55	88	97	1.1
Zwolle ALOG	0	1	3	109	31	116	137	1.2
Zwolle ALOG	1	0	2	21	21	23	25	1.1
Zwolle ALOG	1	1	3	55	32	56	61	1.1
Zwolle ALOG	2	0	3	28	29	34	46	1.4
Zwolle ALOG	2	1	3	83	45	89	93	1.0
Zwolle ANSC	0	0	1	35	31	35	36	1.0
Zwolle ANSC	0	1	3	51	32	53	55	1.0
Zwolle ANSC	1	0	2	40	37	42	42	1.0
Zwolle ANSC	1	1	3	132	71	136	143	1.1
Zwolle ANSC	2	0	3	23	24	25	29	1.2
Zwolle ANSC	2	1	3	134	77	145	158	1.1

APPENDIX IV - BUSINESS UNIT T-TESTS

Pairwise Comparisons		Client Satisfaction						Absolute Performance					
Mean Difference (I-J)		Treatment Group			Tests			Treatment Group			Tests		
Business Unit	Hypothesis	0	1	Diff in Diff	Within Subject	Between Subject	Diff in Diff	0	1	Diff in Diff	Within Subject	Between Subject	Diff in Diff
Ballytivnan	Phase 1μ < Phase 0μ	-0.160	-0.139	0.021	TRUE	FALSE	FALSE	0.433	-.363*	-0.796	TRUE	TRUE	TRUE
Ballytivnan	Phase 2μ < Phase 0μ	0.327	0.092	-0.236	FALSE	TRUE	FALSE	.874*	-0.103	-0.977	TRUE	TRUE	TRUE
Ballytivnan	Phase 2μ > Phase 1μ	0.487	0.230	-0.257	TRUE	FALSE	FALSE	0.441	0.260	-0.181	TRUE	FALSE	FALSE
Breda	Phase 1μ < Phase 0μ	-.658*	-0.223	0.435	TRUE	FALSE	FALSE	-0.162	-0.093	0.068	TRUE	FALSE	FALSE
Breda	Phase 2μ < Phase 0μ	-.459*	-0.066	0.393	TRUE	FALSE	FALSE	.284*	-.506*	-0.790	TRUE	TRUE	TRUE
Breda	Phase 2μ > Phase 1μ	0.199	0.157	-0.042	TRUE	FALSE	FALSE	0.446	-.413*	-0.859	FALSE	FALSE	FALSE
Clonmel	Phase 1μ < Phase 0μ	-.689*	-.343*	0.346	TRUE	FALSE	FALSE	-.586*	-0.083	0.503	TRUE	FALSE	FALSE
Clonmel	Phase 2μ < Phase 0μ	-.374*	-0.138	0.236	TRUE	FALSE	FALSE	-.580*	0.131	0.711	FALSE	FALSE	FALSE
Clonmel	Phase 2μ > Phase 1μ	0.316	.205*	-0.111	TRUE	FALSE	FALSE	0.006	.214*	0.208	TRUE	TRUE	TRUE
Cootehill	Phase 1μ < Phase 0μ	0.045	-0.261	-0.306	TRUE	TRUE	TRUE	-0.420	-0.309	0.112	TRUE	FALSE	FALSE
Cootehill	Phase 2μ < Phase 0μ	0.370	0.069	-0.301	FALSE	TRUE	FALSE	-0.295	-0.075	0.221	TRUE	FALSE	FALSE
Cootehill	Phase 2μ > Phase 1μ	0.325	0.330	0.005	TRUE	TRUE	TRUE	0.125	0.234	0.109	TRUE	TRUE	TRUE
Donegal	Phase 1μ < Phase 0μ	0.101	0.010	-0.091	FALSE	TRUE	FALSE	0.014	-0.074	-0.088	TRUE	TRUE	TRUE
Donegal	Phase 2μ < Phase 0μ	0.229	-0.029	-0.257	TRUE	TRUE	TRUE	0.214	-0.063	-0.277	TRUE	TRUE	TRUE
Donegal	Phase 2μ > Phase 1μ	0.128	-0.039	-0.166	FALSE	FALSE	FALSE	0.200	0.011	-0.189	TRUE	FALSE	FALSE
Ettlingen	Phase 1μ < Phase 0μ	-1.193*	-.480*	0.713	TRUE	FALSE	FALSE	-.805*	-.417*	0.388	TRUE	FALSE	FALSE
Ettlingen	Phase 2μ < Phase 0μ	-1.250*	-.328*	0.922	TRUE	FALSE	FALSE	-0.642	-0.175	0.467	TRUE	FALSE	FALSE
Ettlingen	Phase 2μ > Phase 1μ	-0.057	0.152	0.209	TRUE	TRUE	TRUE	0.163	.242*	0.079	TRUE	TRUE	TRUE
Hannover	Phase 1μ < Phase 0μ	0.131	-0.124	-0.255	TRUE	TRUE	TRUE	0.214	-.163*	-0.377	TRUE	TRUE	TRUE

Hannover	Phase 2μ < Phase 0μ	0.073	-0.045	-0.119	TRUE	TRUE	TRUE	.351*	-0.005	-0.356	TRUE	TRUE	TRUE
Hannover	Phase 2μ > Phase 1μ	-0.058	0.079	0.137	TRUE	TRUE	TRUE	0.137	0.158	0.021	TRUE	TRUE	TRUE
Heerlen	Phase 1μ < Phase 0μ	-0.413	0.102	0.514	FALSE	FALSE	FALSE	-0.338	-0.074	0.264	TRUE	FALSE	FALSE
Heerlen	Phase 2μ < Phase 0μ	-.851*	-0.233	0.618	TRUE	FALSE	FALSE	-.783*	-0.214	0.569	TRUE	FALSE	FALSE
Heerlen	Phase 2μ > Phase 1μ	-0.448	-0.334	0.104	FALSE	TRUE	FALSE	-0.445	-0.141	0.304	FALSE	TRUE	FALSE
Hoofddorp	Phase 1μ < Phase 0μ	-.630*	-0.198	0.432	TRUE	FALSE	FALSE	-0.520	-0.208	0.312	TRUE	FALSE	FALSE
Hoofddorp	Phase 2μ < Phase 0μ	-.614*	-0.134	0.480	TRUE	FALSE	FALSE	-0.174	-0.102	0.073	TRUE	FALSE	FALSE
Hoofddorp	Phase 2μ > Phase 1μ	0.016	0.064	0.048	TRUE	TRUE	TRUE	0.345	0.106	-0.239	TRUE	FALSE	FALSE
Liffey Valley	Phase 1μ < Phase 0μ	-0.489	0.169	0.658	FALSE	FALSE	FALSE	0.231	-0.037	-0.268	TRUE	TRUE	TRUE
Liffey Valley	Phase 2μ < Phase 0μ	-0.001	0.235	0.236	FALSE	FALSE	FALSE	.581*	-0.136	-0.717	TRUE	TRUE	TRUE
Liffey Valley	Phase 2μ > Phase 1μ	0.488	0.066	-0.423	TRUE	FALSE	FALSE	0.349	-0.099	-0.448	FALSE	FALSE	FALSE
Longford	Phase 1μ < Phase 0μ	-0.106	-0.208	-0.102	TRUE	TRUE	TRUE	-0.125	-0.133	-0.007	TRUE	TRUE	TRUE
Longford	Phase 2μ < Phase 0μ	-0.052	-0.101	-0.049	TRUE	TRUE	TRUE	-0.134	-0.111	0.023	TRUE	FALSE	FALSE
Longford	Phase 2μ > Phase 1μ	0.054	0.107	0.054	TRUE	TRUE	TRUE	-0.009	0.022	0.031	TRUE	TRUE	TRUE
Maidenhead	Phase 1μ < Phase 0μ	0.307	-0.095	-0.403	TRUE	TRUE	TRUE	0.274	0.028	-0.245	FALSE	TRUE	FALSE
Maidenhead	Phase 2μ < Phase 0μ	0.433	-0.078	-0.511	TRUE	TRUE	TRUE	0.175	0.037	-0.139	FALSE	TRUE	FALSE
Maidenhead	Phase 2μ > Phase 1μ	0.126	0.017	-0.108	TRUE	FALSE	FALSE	-0.098	0.008	0.107	TRUE	TRUE	TRUE
Neustadt	Phase 1μ < Phase 0μ	-0.160	-0.119	0.041	TRUE	FALSE	FALSE	-0.567	-0.159	0.407	TRUE	FALSE	FALSE
Neustadt	Phase 2μ < Phase 0μ	-0.197	-0.217	-0.020	TRUE	TRUE	TRUE	-0.462	-0.228	0.234	TRUE	FALSE	FALSE
Neustadt	Phase 2μ > Phase 1μ	-0.037	-0.098	-0.061	FALSE	FALSE	FALSE	0.105	-0.069	-0.173	FALSE	FALSE	FALSE
Olst	Phase 1μ < Phase 0μ	-0.370	-.462*	-0.092	TRUE	TRUE	TRUE	-.567*	-.430*	0.137	TRUE	FALSE	FALSE

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Olst	Phase 2μ < Phase 0μ	0.095	-.365*	-0.460	TRUE	TRUE	TRUE	0.164	-0.216	-0.380	TRUE	TRUE	TRUE
Olst	Phase 2μ > Phase 1μ	.465*	0.097	-0.368	TRUE	FALSE	FALSE	.731*	0.215	-0.516	TRUE	FALSE	FALSE
Sittingbourne	Phase 1μ < Phase 0μ	-0.437	-0.130	0.307	TRUE	FALSE	FALSE	-0.313	0.005	0.318	FALSE	FALSE	FALSE
Sittingbourne	Phase 2μ < Phase 0μ	-0.593	0.160	0.753	FALSE	FALSE	FALSE	-0.479	0.130	0.609	FALSE	FALSE	FALSE
Sittingbourne	Phase 2μ > Phase 1μ	-0.156	0.290	0.446	TRUE	TRUE	TRUE	-0.167	0.125	0.292	TRUE	TRUE	TRUE
Weesp	Phase 1μ < Phase 0μ	-.405*	-.127*	0.278	TRUE	FALSE	FALSE	-.270*	-.214*	0.056	TRUE	FALSE	FALSE
Weesp	Phase 2μ < Phase 0μ	-.300*	-0.024	0.276	TRUE	FALSE	FALSE	-0.232	-0.085	0.148	TRUE	FALSE	FALSE
Weesp	Phase 2μ > Phase 1μ	0.104	0.103	-0.001	TRUE	FALSE	FALSE	0.037	0.130	0.092	TRUE	TRUE	TRUE
Westport	Phase 1μ < Phase 0μ	0.684	-0.192	-0.877	TRUE	TRUE	TRUE	0.368	-0.077	-0.445	TRUE	TRUE	TRUE
Westport	Phase 2μ < Phase 0μ	0.789	-0.309	-1.099	TRUE	TRUE	TRUE	0.316	-0.224	-0.540	TRUE	TRUE	TRUE
Westport	Phase 2μ > Phase 1μ	0.105	-0.117	-0.222	FALSE	FALSE	FALSE	-0.053	-0.147	-0.094	FALSE	FALSE	FALSE
Wetzlar	Phase 1μ < Phase 0μ	-0.488	-0.186	0.302	TRUE	FALSE	FALSE	-0.103	-0.013	0.090	TRUE	FALSE	FALSE
Wetzlar	Phase 2μ < Phase 0μ	-.663*	-0.292	0.371	TRUE	FALSE	FALSE	-0.509	-0.065	0.444	TRUE	FALSE	FALSE
Wetzlar	Phase 2μ > Phase 1μ	-0.175	-0.107	0.068	FALSE	TRUE	FALSE	-0.406	-0.052	0.354	FALSE	TRUE	FALSE
Wiesbaden	Phase 1μ < Phase 0μ	-.154*	-.190*	-0.036	TRUE	TRUE	TRUE	-0.139	-.252*	-0.113	TRUE	TRUE	TRUE
Wiesbaden	Phase 2μ < Phase 0μ	-0.107	-.167*	-0.060	TRUE	TRUE	TRUE	-.140*	-.085*	0.055	TRUE	FALSE	FALSE
Wiesbaden	Phase 2μ > Phase 1μ	0.048	0.024	-0.024	TRUE	FALSE	FALSE	-0.001	.167*	0.168	TRUE	TRUE	TRUE
Witney	Phase 1μ < Phase 0μ	-0.126	-0.076	0.051	TRUE	FALSE	FALSE	-.722*	-0.098	0.624	TRUE	FALSE	FALSE
Witney	Phase 2μ < Phase 0μ	-0.092	0.133	0.224	FALSE	FALSE	FALSE	-0.450	0.092	0.542	FALSE	FALSE	FALSE
Witney	Phase 2μ > Phase 1μ	0.035	0.208	0.174	TRUE	TRUE	TRUE	0.272	0.191	-0.082	TRUE	FALSE	FALSE
Zwolle ALOG	Phase 1μ < Phase 0μ	-0.280	-.292*	-0.012	TRUE	TRUE	TRUE	-0.173	-.390*	-0.217	TRUE	TRUE	TRUE
Zwolle ALOG	Phase 2μ < Phase 0μ	-0.108	-0.200	-0.092	TRUE	TRUE	TRUE	-0.202	-0.153	0.049	TRUE	FALSE	FALSE

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Zwolle ALOG	Phase 2μ > Phase 1μ	0.172	0.092	-0.079	TRUE	FALSE	FALSE	-0.029	0.237	0.267	TRUE	TRUE	TRUE
Zwolle ANSC	Phase 1μ < Phase 0μ	-0.304	-0.020	0.284	TRUE	FALSE	FALSE	-.726*	0.035	0.761	FALSE	FALSE	FALSE
Zwolle ANSC	Phase 2μ < Phase 0μ	0.355	0.132	-0.223	FALSE	TRUE	FALSE	-0.352	0.090	0.442	FALSE	FALSE	FALSE
Zwolle ANSC	Phase 2μ > Phase 1μ	.659*	0.152	-0.507	TRUE	FALSE	FALSE	0.374	0.056	-0.318	TRUE	FALSE	FALSE

APPENDIX V - ADDITIONAL TREATMENT GROUP BREAKDOWN

To better understand the differences between treatment groups and additional group was identified with the sample that allows comparing both the treatment group and control group. The paraphs illustrated in Figure 24, show the trend lines for both the control group (group 0), the treatment group (group 1) and the additional group (group 2). Group 2 exists of services that have been outsourced prior to 2015 (the start of the quasi-experiment) and remained outsourced throughout the 3 experimental phases.
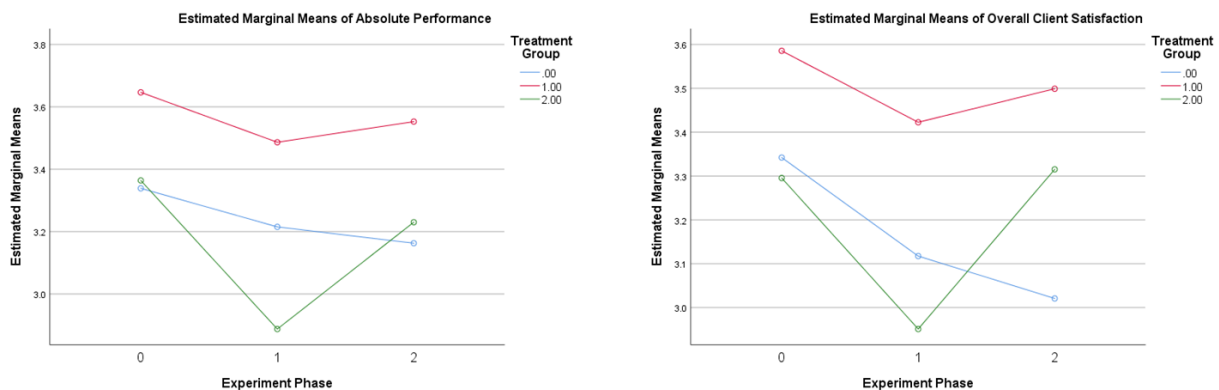

Figure 24 - Additional Treatment Group Breakdown

Interestingly enough, group 2 shows it was impacted even more by the event of outsourcing then control group. Besides the fact that group 2 is impacted most on the short term, it also shows a significant recovery or even improvement for both IT performance and client satisfaction that exceeds the long-term performance and satisfaction for the control group.

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