Studying the Hidden Costs of Offshoring – the Effect of Psychic Distance

Sarah Deutsch

Mie Hørlykke Jørgensen

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Sarah Deutsch & Mie Hørlykke Jørgensen
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Executive summary

In light of the increasing globalization and the growing phenomenon of offshoring an interesting field to study is the one of hidden costs and the implicit cost estimation failures of decision-makers. Organizations today are often caught off guard by post decision surprises, as the strategic decision to relocate activities across countries is associated with hidden costs. This thesis investigates the hidden costs of offshoring in the context of psychic distance, where psychic distance can be defined as the country specific differences that disturb the flow of information between actors. Hereby adding to the existing literature by examining how psychic distance affects the decision-makers' ability to correctly estimate the costs of offshoring.

It has been theoretically deduced that hidden costs occur in situations where the psychic distance among the included countries is high. In those situations decision-makers are likely to be subject to bounded rationality as it is difficult for them to predict the actual challenges when relocating activities to a psychic distant country. Offshoring involves relying on global project coordination, where the role of work interdependencies between globally distributed sites and managing across geographical, national and cultural borders is recognized to be an important and critical factor that requires significant time and effort. The decision-makers are exposed to new complexities, challenges and uncertainties when allocating resources and estimating the associated costs and benefits, thus cost estimation failures are more likely to occur.

This thesis uses unique survey data on 158 Danish offshore implementations from the Global Operation Network to test the effect of psychic distance (between home and host countries) on cost estimation failures. The survey collected data on whether companies experienced hidden costs associated with relocation of activities abroad. Approximately 25% of the included offshore implementations experienced hidden costs under or after the offshore implementation – indicating that hidden costs in fact are a problem that affects many offshore organizations, and consequently an important subject to study.

This thesis finds that decision-makers are more likely to make cost estimation failures in offshore situations where the *geographical distance* is high. Moreover, the findings to some extent indicate that the type of activity influences the effect of psychic distance on cost estimation failures. The rest of the psychic distance factors included in this thesis, *cultural differences, language differences, political differences, time zone differences and economic development*, were either found to be statistically insignificant or to have an inconsistent effect on cost estimation failures, and hence the actual effect could not be concluded. Therefore we feel confident in concluding, based on the analysis, that psychic distance should not prevent companies from relocating activities to foreign countries. Companies should nonetheless take the challenges associated with geographical distance into account when assessing offshore opportunities.

A factor that might explain the lack of evidence found in this thesis is the new phenomenon of 'born-global' organizations. Recent studies point in the direction that the phenomenon of 'born-global' organizations decreases the importance of psychic distance. We therefore argue that the theory of psychic distance might be outdated. Consequently the theory needs to be adapted to fit today's modern organizations.

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1. Introduction

We are experiencing a world that is continuously becoming more and more globalized, where organizations find it attractive to offshore activities and recruit across national borders in order to exploit access to low labor costs, access to new markets and knowledge, and finally access to skilled and qualified personnel (Manning et al., 2008). Offshoring can be defined as the geographical restructuring of the firm (Contractor et al., 2010), or the process of sourcing any business task, process, or function supporting domestic and global operations from abroad (Manning et al., 2008). Offshoring many activities of the firm has become a major issue of concern in welfare economics, politics, business management, and international business scholarship (Tallman, 2011). It is a phenomenon that has gained momentum in recent years, and is today increasingly being used as an important strategic tool by firms across countries to achieve competitive advantages in a continuously globalizing world (Contractor et al., 2010).

The strategic decision to offshore implies that a domestic firm sends some portion of its value-adding activities, whether manufacturing, business processes, or software writing, to a foreign country while continuing to sell its output into the domestic market (Tallman, 2011). In the strategic decision-making process of offshoring a number of strategic and operational decisions needs to be addressed. The decision-makers need to consider, among other: (1) the ideal disaggregation of the firm's value chain, (2) the most appropriate host location, (3) the contractual relationships/optimal degree of ownership, (4) and the mode of governance (Pedersen et al., 2013). Critically to decisions like this is the decision-makers' ability to accurately forecast and estimate the costs and consequences of the organizational change, to make sure that the most beneficial alternative is chosen (Durand, 2003).

As offshoring leads to the relocation of activities across geographical, national and cultural borders the firm needs not only to make cost estimation based on their own organization, resources and environment. The organization will also have to include the organizational structure, characteristics and the environment of the offshore vendor, which the organization is expected to coexist with in the future. However, as the decision-makers are subject to bounded rationality regarding future events (Simon, 1955) it is almost impossible for them to forecast and estimate every outcome and nearly impossible to write contracts that covers every possible incidence. Further, as the organization gets more complex and complicated to manage the problem of bounded rationality becomes even more problematic (Ietto-Gillies, 2012).

Consequently, many organizations find that the actual costs of the strategic decision to offshore exceeds the expected costs, leading to substantial hidden costs (Hendry, 1995; Barthélemy, 2001; Overby, 2003; Stringfellow et al., 2008; Dibbern et al., 2007; Kumar et al., 2009; Aubert et al., 2009; Holweg et al., 2010; Larsen et al., 2012), costs that were not accounted for in the strategic decision-making process. Hence, many organizations find that the initially anticipated benefits and costs-savings are not always realized as

operational challenges and the associated costs outweigh the forecasted benefits and savings. Hence, organizations will experience discrepancy between the anticipated and the actual costs.

In this thesis we study hidden costs in the context of psychic distance seeking to investigate how this factor affects the cost estimation failures of decision-makers. Psychic distance can be defined as country-specific differences and dissimilarities, which disturb the flow of information between actors (Johanson & Wiedersheim-Paul, 1975; Johanson & Vahlne, 1977). The theory was in its origin introduced in 1956, however first popularized in the 1970s. The notion of psychic distance, is according Johanson & Wiedersheim, (1975) and Johanson & Vahlne (1977), built on the idea that it is easier for managers to collect and understand knowledge and information from certain countries than from others. Consequently, we argue that the concept of psychic distance should make certain countries more easily assessable for managers in relation to strategic decisions and cost estimation. The psychic distance factors are characterized by country-specific differences and dissimilarities, and can be grouped into categories such as: *language differences, economic differences, geographical differences, cultural differences* and *differences in the political and legal system.*

More specifically the objective of this thesis is to understand why certain costs are not accounted for (hidden) in the decision-making process. We argue that cost estimation failures increase with psychic distance – the more distant a host country is in terms of psychic distance from the home country, the higher is the likelihood of cost estimation failures.

This thesis uses unique data on 158 Danish offshore implementations testing the effect of psychic distance on cost estimation failures and thereby adding to the existing literature by showing how psychic distance affects the decision-makers' ability to correctly estimate the costs of offshoring. Approximately 25% of the included offshore implementations experienced hidden costs under or after the offshore implementation. Based on this we conclude that cost estimation failures are a problem that affects many offshore organizations, and consequently an important subject to study. This research therefore also seeks to investigate whether or not it is critical for organizations to incorporate psychic distance into the strategic decision-making and cost estimation of their offshore decision. Hence, the contribution of this thesis falls broadly into two areas.

1.1. Problem identification

The shared motivations and expectations behind companies' offshoring decisions are to achieve some sort of economic benefit and to achieve international competitive advantages (Jensen & Pedersen, 2011), however as explained above these expectations are unfortunately not always realized.

A large amount of research points in the direction that many organizations find that the initial estimated benefits and costs-savings are not always realized as operational challenges and costs of knowledge transfer, inter-site communication, coordination and control outweigh the forecasted savings and benefits. As a consequence organizations are surprised by unexpected costs – costs, which are hidden from the managers in the strategic decision-making (Hendry, 1995; Barthélemy, 2001; Overby, 2003; Stringfellow et al., 2008; Dibbern et al., 2007; Kumar et al., 2009; Aubert et al., 2009; Holweg et al., 2010; Larsen et al., 2012). As an example, organizations might experience that the time spend on knowledge sharing related to the relocation of business activities are more complicated than expected due to time zone differences and geographical distance (Stringfellow et al., 2008). An organization might also realize that the communication and coordination of the day-to-day business activities are more complicated and time consuming due to back-and-forth communication to achieve a common understanding across actors from diverse cultures (Kumar et al., 2009). The above-mentioned unforeseen challenges may require investments in extra resources for monitoring, communication, coordination and control, so that an efficient implementation and a successful execution of the day-to-day activities can be achieved. These unanticipated costs or 'hidden costs' implies that the decision-makers are not fully informed when estimating the costs and consequences of the offshoring decision – the decision to offshore and the strategic decision-making are thereby made under bounded rationality and uncertainty of the full consequences (Simon, 1955). Accordingly, cost estimation failure exists due to hidden costs (Larsen et al., 2012).

If the company realizes that the decision to offshore potentially leads to a future economic loss due to hidden costs, then the consequences of the hidden costs can be crucial to the success of the strategic implementation and the future existence of the offshore activities, as it might be more beneficial to back-source activities. Based on this, and the fact that 25% of the included offshore implementations experienced hidden costs, we conclude that the topic of hidden costs of offshoring is of high relevance to further investigate.

Offshoring involves relying on global project coordination, where the role of work interdependencies between globally distributed sites and managing and communicating across country borders is recognized to be an important and critical factor that requires significant time and effort (Kumar et al., 2009; Stringfellow et al., 2008). Physical proximity makes it possible for those involved in the work to directly observe, monitor and control the different business activities, as well as to observe the other actor's actions and outcomes. It allows for immediate and real time communication and mutually adjustment with the other actors face to face (Kumar et al., 2009). Relocating activities across national borders introduces a number of challenges for

managing, observing, coordinating and communicating (Dibbern et al., 2007). Kumar et al. (2009) highlights that physical distance makes it impossible for the actors to directly observe each other. Because of the geographic distance, and sometimes also differences in time zones, the implicit actors needs more time for coordination and communication. At the same time communication also becomes more complicated and time consuming because of differences in linguistic and cultural meanings between dispersed work sites (Aubert et al., 2009; Kumar et al., 2009). Consequently, interaction between geographically dispersed units makes the psychic distance more critical than in other types of investments. Psychic distance can be defined as country-specific differences and dissimilarities, which disturb the flow of information between actors (Johanson & Wiedersheim-Paul, 1975; Johanson & Vahlne, 1977). As a result of these factors, the decision-makers are presented with new complexities, challenges and uncertainties when allocating resources and estimating the costs and benefits of offshoring as the time and effort required for the challenges are unknown – hence the decision-makers are subject to bounded rationality (Larsen et al., 2012).

We therefore argue that the psychic distance between globally distributed sites, involves a number of operational challenges and associated costs, some of which are difficult to foresee in the strategic decision-making due to bounded rationality, and therefore difficult to incorporate in the cost estimation process.

We are experiencing a world that is continuously becoming more and more globalized, and it is therefore expected that companies in the long run would keep finding it attractive to offshore activities and recruit across national borders in order to gain international competitive advantages. A study of how the psychic distance factors influence the cost estimation failures in the strategic decision-making process will therefore be interesting and relevant to conduct. By identifying the significant factors we might increase the companies' ability to correctly estimate the cost of offshoring in the future. The purpose of this thesis is therefore to investigate how psychic distance affects the level of hidden costs associated with offshoring.

1.2. Research question

When relocating activities to a foreign country, organizations are required to deal with the psychic distance between the offshore company and the offshore vendor. Consequently, organizations are often presented with new complexities and challenges when relocating activities across borders. These challenges can be difficult to foresee, hence cost estimation failures may occur as a consequence of hidden costs.

In accordance with the problem identification, this thesis will examine the following research question:

> *How does psychic distance between countries affect the likelihood of cost estimation failures in the strategic decision to offshore?*

The above research question implies *that psychic distance have an effect on the accuracy of the cost estimation in the context of offshoring.* As we see offshoring as a strategic decision, where the costs estimation will be made in the strategic decision-making, the main parameters in this thesis will be: "the strategic decision to offshore", "cost estimation failures" and "psychic distance".

1.3. Scope of this thesis

The overall goal of this thesis is to provide knowledge of the reasons for cost estimation failures that firm experiences when relocating activities across countries. This will be done through an investigation of how the psychic distance between countries affect decision-makers ability to correctly estimate the costs of offshoring. The knowledge purpose of this thesis is therefore twofold (Saunders et al., 2007). On the one hand it is descriptive as the thesis seeks to theoretically describe how psychic distance affects the cost estimation failures associated with the decision to offshore. On the other hand this thesis also has an explanatory purpose in the sense that it seeks to establish a causal relationship between cost estimation failures in offshoring and the psychic distance among the countries involved. This thesis does not seek to describe the types of costs associated with offshoring merely it seeks to outline the reasons for cost estimation failures as a consequence of hidden costs.

1.4. Structure of this thesis

The structure of this thesis will in the following be presented. The below table should serve as a guide for the readers throughout this thesis. The thesis is divided into six sections:

Table 1: Structure of the thesis

	Section	Purpose
1	Introduction	The purpose of this section is to present the problem field and research question together with the relevance of this research
2	Theory and hypotheses development	The purpose of this section is to present the teoretical foundation behind the developed hypotheses
3	Research methodology	The purpose of this section is to present the research methodology applied in this thesis. This section will explain the theoretical and empirical frameworks together with the analytical approach
4	Empirical Analysis and Results	The purpose of this section is to test and analyse the developed hypotheses using hierarchical regression analysis
5	Discussion	The purpose of this section is to discuss the findings of section 4 and potentially revise the existing theory deduced in section 2. Futher this section also discuss the implications for future research
6	Conclusion	The purpose of this section is to conclude on the theoretical- and statistical findings of the thesis

Source: Own making

2. Theoretical foundation

In the following subsections, a literature review of the main parameters used to answer the research question will be conducted. Hence the literature review will concentrate on offshoring, the strategic decision-making process, cost estimation failures, and the effect of psychic distance among countries. This section will further present two short real life examples to substantiate our hypothesis.

2.1. An introduction to offshoring

Offshoring can be defined as the process of sourcing and coordinating tasks and business activities (including production, distribution, and business services, as well as core activities like research and development) across national borders (Manning et al., 2008). The 2004 version of the World Investment Report conducted by UNCTAD depicts the term and characteristic of offshoring as follows:

Table 2: Offshoring and outsourcing – some definitions

	Internalized production	Externalized Production
Home Country	*Domestic in-house production* Performs the activities at home	*Domestic outsourcing* Suppliers in home country
Foreign Country (Offshoring)	*(Captive) offshoring* Own subsidiary in foreign country	*Offshoring outsourcing* Suppliers in foreign country

Source: (UNCTAD, 2004)

Table 2 illustrates that offshoring has two dimensions: 1) the ownership dimension, which concerns the decision to execute the activities in-house or buying the services from external suppliers, and 2) the location dimension, which concerns the location of the business process, either in the home country or in a foreign country. Offshoring occurs when firms relocate activities to foreign countries, whether they are conducted by separately owned suppliers or by fully owned (captive) subsidiaries. The focus in this thesis will be on the location dimension and the term offshoring will be used for both firm internal (captive offshoring) and firm external (offshore outsourcing).

Multiple researches have been conducted in the field of offshoring to understand both the drivers behind, and the consequences and effects of offshoring. Business academics have especially over the last decade taken a strong interest in the phenomenon. The research streams so far can according Schmeisser (2013) be divided into three main categories: (1) *The antecedents of offshoring*, which captures the factors and dynamics that trigger the decisions by organizations to offshore, internal factors as well as external factors, (2) *The offshoring phenomenon*, which captures: the definition and conceptualization of the offshoring phenomenon, the activities firms chooses to offshore, the location where the firm chooses to offshore, the coordination and governance mode firms chooses (including the consequences), and the effect on the global business

environment the firm has, and (3) *The consequence of offshoring*, which captures the impact and economic success that an engagement in offshoring has on the offshoring organization, financial as well as the development of resources and capabilities. Overall the researches so far have dealt with the motivation behind offshoring, the activities which are offshored, choice of location, the operational mode and the effect of offshoring. In this thesis all three research streams will be addressed, however the primarily focus will be on the third stream by examining why some costs associated with the relocation of business activities to foreign countries, are not accounted for (hidden) in the strategic decision-making.

Offshoring is not only a 'hot topic' among researchers it is also an accelerating trend in the globalization of the organization. The practice of offshoring is though not a new phenomenon and especially the Western economies have been experimented with various forms of offshoring for decades (Pedersen et al., 2013). In the 1960s U.S. multinational corporations, such as Ford and General Motors, offshored labor-intensive manufacturing processes to low-cost areas such as Mexico to reduce labor costs. In recent years some new trends have emerged and for a growing number of organizations reducing labor costs is no longer the only driver behind the strategic decision to offshore. Access to pools of highly skilled talent and new markets are among the "new" strategic drivers for relocating activities across borders (Manning et al., 2008). Furthermore, offshoring are today no longer only limited to standardized information technology (IT) or business processes, but increasingly involves processes such as: product development functions, research and development (R&D), and product design (Manning et al., 2008). One important feature, which has contributed to the above-mentioned evolution of offshoring practice, is the information and communication technology revolution, starting in the early 1990s (Pedersen et al., 2013). Offshoring is today growingly being used as an important strategic tool by firms across countries to achieve competitive advantages in a continuingly globalizing world (Jensen & Pedersen, 2011). The competitiveness of the global firm in the 21st century will therefore be determined not only by its technological competencies, but equally by its strategic decision competencies, as multiple dimensions should be considered in a world of outsourcing and offshoring (Contractor et al., 2010).

Firms' decision to engage in offshoring can thereby be seen as an *active* strategic decision to engage in foreign direct investment, which regardless of the strategic driver includes overall three organizational processes: (1) the disaggregation of the firms value chains into activities, (2) the relocation of the activities into a foreign country and (3) the re-integration of the activities in such a way that the organization again becomes a united entity (Pedersen et al. 2013). The decision-makers must in the above three strategic processes foresee all consequences and at their best try to estimate the costs of the implementation in order to increase their competitive advantages (Durand, 2003). It is only after the implementation that the firm will realize the actual costs and benefits of the offshoring decision – thereby the actual success of the strategic decision will not be realized until after the implementation.

2.2. Strategic decision-making

As mentioned a main element of the offshoring process is the strategic decision-making. In any one strategic decision-making process the firm or the management of the firm, are to gather appropriate information, and develop and analyze a set of alternative actions. When all alternatives have been analyzed the firm are to select the most beneficial and efficient alternative (Eisenhardt & Zbaracki, 1992). Among researchers, strategic decision-making has been described as the commitment to conduct important decisions in terms of the actions taken, resources allocated and the precedents set, and as a consequence strategic decision-making critically affect the organizational health and survival (Eisenhardt & Zbaracki, 1992). Strategic decision-making is according Eisenhardt & Martin (2000) a strategic dynamic capability in which managers use their personal expertise and experience to make choices that shape the major strategic move of the organization. Dynamic capabilities are, according the paper by Eisenhardt & Martin (2000), the organizational and strategic routines by which firms achieve new resources. And as organizations gain experience, they will be able to apply more sophisticated techniques and management tools and thereby make more accurate decisions (Contractor et al., 2010).

The strategic decision to offshore implies that a domestic firm sends some portion of its value-adding activities, whether manufacturing, business processes, or software writing, to another country while continuing to sell its output into the domestic market (Tallman, 2011). In the strategic decision-making process of offshoring a number of strategic and operational decisions needs to be addressed. The decision-makers need to consider, among other: (1) the optimal disaggregation of the firm's value chain, so that the firm ensures that the new organizational structure fit the context and are capable of dealing with foreign activities, (2) the most appropriate host location (country and offshore vendor), so objectives such as lower cost levels, skilled labor, new resources and new markets can be achieved, (3) the contractual relationships/optimal degree of ownership, and (4) the mode of governance and optimal choice of coordination, so that the firm ensures that knowledge transfer/sharing and the executions of the daily tasks are not affected by the distance (Pedersen et al., 2013). Critically to decisions like the above mentioned is the decision-makers' ability to accurately forecast and estimate the costs and consequences of the organizational change, to make sure that the most beneficial alternative is chosen (Durand, 2003). Organizations rely extensively on forecasts and cost estimations in making strategic decisions. Firms that overinvest because of a positive forecast (forecast that are not met) are according Durand (2003) more likely to generate higher fixed costs and overheads. These higher costs are likely to reduce performance, which again influences the success of the strategic decision. Hence, the forecasting and cost estimation ability of an organization appears to be a distinctive organizational capability. Based on this we argue that cost estimation is an important element of the strategic decision to offshore and consequently the strategic decision-making. In this thesis the firm's forecast and estimation ability refers to how precisely the firm can predict the consequences and the costs of relocating business activities across countries.

Throughout time many firms have realized that the strategic decision to offshore activities to foreign locations and the management of a global dispersed organization have been associated with unanticipated operational challenges, new complexities and additional costs (Hendry, 1995; Barthélemy, 2001; Overby, 2003; Stringfellow et al., 2008; Dibbern et al., 2007; Kumar et al., 2009; Aubert et al., 2009; Holweg et al., 2010; Larsen et al., 2012). These extra costs are 'hidden' from managerial attention and are therefore not accounted for in the strategic decision-making and the process of costs estimation. The new complexities and offshore challenges creates difficulties for the decision-makers grasping and anticipating the effect of the organizational change (Pedersen et al., 2013) and as the 'hidden costs' are unexpected, the managers will see a difference between the expected level and the realized level of costs.

2.3. Cost estimation failures – the existence of hidden costs

The strategic decision to offshore will typically be made on the basis of the visible costs, such as labor costs. As an example the hourly cost of a customer contact center worker is estimated to be US $ 13–15 in China, US$ 13–18 in India and the Philippines, and US$ 25–32 in the Czech Republic. These costs are dramatically lower than the estimated costs for a similar worker in the US (Stringfellow et al., 2008). These visible costs are unfortunately only a fraction of the total costs associated with offshoring as many organizations today find hidden costs to be a part of the offshore decision (Hendry, 1995; Barthélemy, 2001; Overby, 2003; Dibbern et al., 2007; Stringfellow et al., 2008; Aubert et al., 2009; Larsen et al., 2012). Hidden costs is in the offshoring literature a new phenomenon and has mainly been used to underscore how the relocation to foreign countries might be more challenging than originally anticipated (Larsen et al., 2012). The definition of hidden costs varies among researchers as some defines these as: all costs in terms of time, effort, and resources spent by the client organization that go beyond the actual payments to the vendor (Dibbern et al., 2007), while others defines it as communication-related costs associated with the use of foreign service providers (Stringfellow et al., 2008). In this thesis we see hidden costs as all of the costs that are not accounted for in the strategic decision-making.

The concept of hidden costs implies that the decision-makers have limited and/or incorrectly information available at the time for the cost estimation – hence the decision-makers may not be able to explicitly and accurately quantify them in the strategic decision-making (Stringfellow et al., 2008). Situations with high cost estimation failures suggest that the decision-makers are unable to account for all the organizational requirements and demands of the activity that have been offshored (Larsen, 2012).

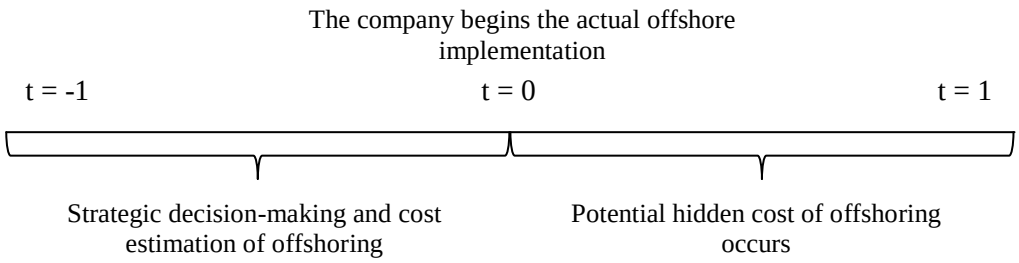
When entering the world of economics, scholars are educated in the concept of traditional economic theory. A theory that assumes that economic agents make rational decisions aiming at maximizing their economic situation. This agent is assumed to have knowledge of the relevant aspects, if not complete then substantial and voluminous. Further it is assumed that the agent has a well-organized and stable system and skills that allow him to account for all alternatives in order for him to reach the most beneficial decision on his scale of

preference (Simon, 1955). This theory have however been questioned. Simon (1955) states that it is necessary to replace the global rationality of the economic agent with a kind of rational behavior that is compatible with the access to information and the computational and predictive ability that are actually possessed by humans. According Simon (1955) decision-makers have to make decisions under three unavoidable limitations: (1) only limited and often unreliable information is available regarding possible alternatives and their future consequences, (2) the human mind has only limited capacity to evaluate and process the information that is available, and (3) only a limited amount of time is available to make the decisions. Therefore even individuals who have an extensive amount of knowledge and who intend to make rational decisions are bound to make the most satisfying, rather than maximizing or even optimizing, decision in a given situation. Thus the decision-makers are subject to bounded rationality (Larsen et al., 2012), a concept that becomes more problematic the higher the complexity of the environment and the organization gets (Ietto-Gillies, 2012).

The concept of bounded rationality makes it almost impossible to forecast and estimate every outcome and nearly impossible to write contracts that covers every possible incidence. Uncertainty is therefore a fundamental problem for the organization in the strategic decision-making process and when assessing the different relocation alternatives (Thompson, 1967). Uncertainty can be defined as the inability to accurately predict the likelihood of future events or accurately predict the outcome of a decision. It can be caused by either lack of information, an inability to discriminate between relevant and irrelevant information or the exclusion of information from people's perceptions (Milliken, 1987). For example, offshoring companies might experience that local suppliers are forced to increase prices above the expected level due to local political regulations. The uncertainty about the future political regulations consequently affect the decision-makers' capability of making precise estimations of the costs associated with the strategic decision to offshore.

As hidden costs occur after the decisions have been made and after the implementation of the offshoring process have started, hidden costs can be categorized as a 'post decision surprise' (Larsen, 2012). The strategic decision-making process, the cost estimation and the occurrence of hidden costs are therefore separated by time and space.

Figure 1: The existence of hidden costs



Source: Own making

If it is assumed that the actual offshoring and relocation of business processes happens at time t=0, then the strategic decisions and planning of future resource allocation are made at time t=-1. The decisions that are made at time t=-1 are based on the firms previous experience and/or knowledge possessed by the firm at that given time. The experience and knowledge possessed at time t=-1 are very likely to be different from the knowledge possessed at time t=1 due to interaction, knowledge transfer and knowledge sharing (learning) with the offshore vendor (Contractor et al., 2010). The occurrence of hidden costs, as mentioned, exists as a post decision surprise, and will therefore occur after the decision has been made and after the implementation of the offshoring process have started, at time t=0. Based on this, we argue that the hidden costs of offshoring occur due to the bounded rationality and the uncertainty of future events. Companies and managers do most likely not possess all relevant information in the strategic decision-making process and their ability to accurately predict the outcome of a decision are therefore bounded. However, as companies gain more experience they will possess a greater amount of knowledge, which most likely will affect the ability of the decision-makers to accurately predict the likelihood of future events or accurately predict the outcome of a decision (Contractor et al., 2010). Figure 1 illustrates the logic behind this mindset.

Several studies have been conducted to identify the nature of and the reason for hidden costs, however only limited evidence has been presented. Table 3 illustrates a selection of the existing literature regarding the hidden costs of offshoring. The nine papers states that the objectives of offshoring are not always achieved and that the offshoring decisions sometimes are proven more costly than initially anticipated due to different unexpected challenges. Some of the researches point in the direction that selecting a trustworthy vendor and the transition phase (learning capacity of the vendor) can trigger hidden costs (Barthélemy, 2001; Overby, 2003; Dibbern et al., 2007), whereas other states that the geographical distance and the associated costs are a potential source to hidden costs (Stringfellow et al., 2008; Kumar et al., 2009; Aubert et al., 2009; Holweg et al., 2010), finally some highlights that the increased managerial challenges for communication and coordination due to task interdependence increases the likelihood of hidden costs (Kumar et al., 2009; Stringfellow et al., 2008; Larsen et al., 2012).

Table 3: Theoretical overview

Literature	Theoretical Contribution
Hendry, 1995	Organizations only base their decision-making on the formal side of the system (value chain and business processes). Organizations forget the informal system (cultural web). Can eliminate financial value. Hidden costs arises due to: *1. Reduced learning capabilities* *2. Reduced robustness* *3. Reduced long-term responsiveness* 4. *Reduced coordination ability*
Barthélemy, 2001	Unforeseen costs can potentially undercut the anticipated benefits of offshoring, if firms make an effort to understand and estimate these costs, then better and more efficient decisions will be made: Factors which affect the level of unforeseen costs: 1. *Vendor search and contracting* (selecting a trustworthy vendor) 2. *Transitioning to the vendor* (learning and knowledge sharing) 3. *Managing the effort* (monitoring, control and communication) 4. *Transitioning after* outsourcing/new vendor (building new relationship from scratch)
Overby, 2003	Outsourcing contains a number of hidden costs – firms therefore have to invest up front to gain financial value – investments, which are sometimes higher than expected. Factors which affect the level of hidden costs i.e. factors which need more focus: 1. *Choosing the vendor* (traveling and coordination expenses, Legal expenses) 2. *Transition phase* (learning/knowledge sharing) 3. *Layoffs (training* of new employees and retention costs) 4. *Cultural differences* (differences in language and work routines, challenges with communication) *5. Ramp up/quality check-up* 6. *Contract managing* (invoicing, auditing and control)
Dibbern et al., 2007	Offshore outsourcing involves extra costs: to control, coordination, knowledge transfer and specification/design, for the client organization. Factors, which might affect these extra costs: 1. *The amount of client specific knowledge required* *2. Absorptive capacity of Vendor* 3. *Offshore-specific client vendor distance* (language barrier, geographic and cultural distance)
Stringfellow et al., 2008	Operating on at a distance will bring certain "invisible costs". Drivers of these costs are: 1. *Interaction intensity* – Service content and processes (standardized/not standardized) 2. *Interaction distance* (geographical, language and cultural distance). A higher level of interaction intensity and interaction distance will lead to the risk of invisible costs (communication and knowledge sharing gets more complicated and crucial).
Kumar et al., 2009	Global distribution of work and the resulting geographical distance between work locations increases managerial challenges for communication and coordination due to task interdependence. Especially gaps in inter-actor communication shift to information and knowledge work and increasing product complexity increases the interdependence and need for communication and coordination.
Aubert et al., 2009	The perceived distance (differences in language and culture and the geographical distance) will increase the level of difficulty in managing the offshored activities, whereas IT should have a decreasing effect. Additional cost for: 1. *Message formalization* (avoid misunderstanding) 2. *Extra cost for communication* (differences in language and attitudes) 3. *Traveling costs*
Holweg et al., 2010	Global sourcing consist of three basic cost elements, static, dynamic and hidden costs, which all must be assessed in managerial decision-making. Due to unforeseen *hidden* and *dynamic* costs, the decision to offshore is less beneficial. Hidden cost are influenced by country specific factors: inflation in labor cost and currency rate, travel costs, loss of intellectual property, the risk of political and economic instability, challenges for managing
Larsen et al., 2012	A higher degree of configuration and task complexity will increase cost-estimation errors in the decision-making process. Factors, which will have an impact on the cost-estimation errors: 1. *Offshoring complexity* (configuration complexity and task complexity) *4. Offshoring experience* 5. *Organizational design orientation*

Source: Own making

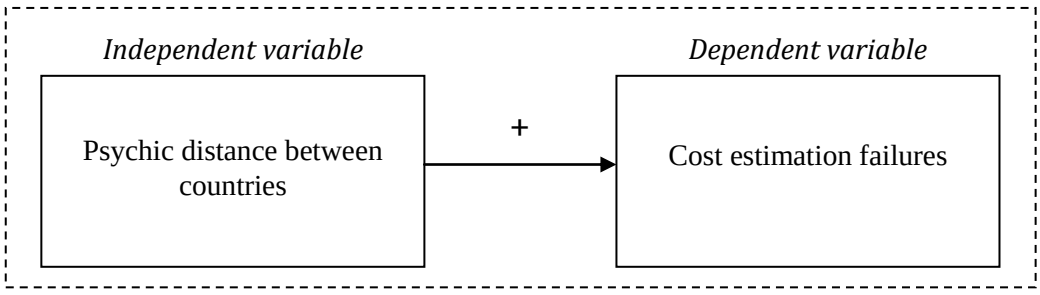
Overall the nine papers agree upon that organizations get more complex and challenging to manage as coordination, communication, knowledge transfer/sharing and monitoring gests more complicated and potentially more costly than expected when engaging in offshoring. However the papers does not all agree upon the factors that contribute to these increased challenges. Among the nine papers two main factors have been identified to have a significant influence on the efficiency of communication, coordination and managing of a global dispersed organization, which might affect the actual cost level exceeding the expected cost level.

The two main factors that we have identified to have a significant effect on cost estimation failures are: (1) *the activity characteristic and interdependence*, such as how standardized the product is and how interdependent the different business tasks is, and (2) *the effect of distance*, such as cultural distance, language distance and geographical distance. The effect of distance have by researchers such as Beckerman (1956), Johanson & Wiedersheim (1975) and Johanson & Vahlne (1977) been characterized as the psychic distance between any two countries, where psychic distance can be defined as the perceived differences between a home country and a foreign country at any given time.

Offshoring is the building of global networks (Contractor et al., 2010) and a global dispersed organization can thereby be seen as a network of global units, where every unit in some way is interdependent. Changes and uncertainty in one unit will potentially affect the interlinked units. Further, a direct consequence of offshoring is the relocation of business activities to a foreign country. This relocation implies that the organization will be crossing geographical, national and cultural borders. In this matter the firm needs not only to make cost estimation in the strategic decision-making based on their own organization, resources and environment. The organization will also have to include the organizational structure, characteristics and the environment of the offshore vendor, which the organization is expected to coexist with in the future. In all of this the psychic distance between the two involved countries will most definitely play a role as the perception of the level of psychic distance between specific countries influences the actors' decisions and actions in international business affairs (Dow, 2009). We argue that the organization will have to take into account the psychic distance between the offshore company and the offshore vendor, when allocating resources and estimating the cost of the business processes. Consequently, organizations are often presented with new complexities and challenges when relocating activities across borders, as their perception of the level of psychic distance will influence their abilities to incorporate the psychic distance factors in the strategic decision-making. These factors could for example be: how the language differences are to effect the communication of business activities and the transfer of knowledge between the offshore company and the offshore vendor or how the cultural differences will affect the attitude of the employees and how the political situation are going to affect the activities, which have been offshored.

We argue that the consequences of these challenges and thereby the exact costs is difficult for the firm to accurately forecast in the strategic decision-making process as the decision-makers have bounded knowledge. Their decision will be made under uncertainty of how the geographical distance and country-specific differences will affect the interaction success of the offshore company and the offshore vendor. Further the decision-makers also have a bounded knowledge of the future market and the market-influencing factors (Johanson & Vahlne, 1977). Consequently, we argue that psychic distance between countries will have an impact on the accuracy of the cost estimation in the strategic decision-making as firm's ability to incorporate external information increases its odds of accurately forecasting resource allocation and organizational and environmental changes (Durand, 2003). The theoretical framework is thereby illustrated in figure 2:

Figure 2: The impact of psychic distance on the level of cost estimation failures



Source: Own making

Based on the above our hypothesis is that psychic distance factors are to affect the accuracy of the cost estimation, as the strategic decision-makers have a bounded knowledge of future events. The psychic distance between countries is likely to cause extra or hidden costs – costs, which are difficult to grasp in the strategic decision-making. This topic is important to study as the consequences of hidden costs, and thereby the existence of cost estimation failures, can be crucial to the success of the strategic implementation and the future existence of the offshore activities. If the total costs (including the hidden costs) associated with offshoring exceeds the benefits of the offshoring implementation, then the strategic expectations will not be met and the relocation of the business activities will thereby be a failure for the offshore company.

An extensive amount of research have been done in the field of psychic distance and the effect it has on the decision to export, which market to select, the entry mode choices, the degree of control and adaption in a foreign market and the international performance (Johanson & Wiedersheim-Paul, 1975; Johanson & Vahlne, 1977; Ghemawat, 2001; Dow & Karunaratna, 2006; Dow, 2009). In this thesis psychic distance will be studied in relation to the existence of cost estimation failures of offshoring.

2.4. Psychic distance and the effect on cost estimation failures

The term of psychic distance is made up of the Greek word "psychikos", an adjective referring to an individual's mind and soul, and "distance" which is based on perceived cultural differences between a home country and a foreign country regardless of physical time and space factors, which differs across diverse cultures. The concept of psychic distance was in its origin introduced by Beckerman in 1956 in the concluding paragraph of his paper where he reflected upon the role of 'psychic distance' and the tendency for countries to trade with more similar countries (Håkanson & Ambos, 2010):

> "… a special problem is posed by the existence of "psychic distance". It is probable that the manner in which the purchases of raw materials by a firm are distributed geographically will depend on the extent to which foreign sources have been personally contacted and cultivated. While the transport costs paid (directly or indirectly) by an Italian entrepreneur on a raw material supplied by Turkey may be no greater (as the material may come by sea) than the same material supplied by Switzerland, he is more likely to have contacts with Swiss suppliers, since Switzerland will be "nearer" to him in a psychic evaluation (fewer language difficulties, and so on), as well as in the economic sense that air travel will absorb less of his time." (Beckerman, 1956)

Though Beckerman introduced the concept of psychic distance in his paper in 1956, the psychic distance research did not take off until the scholars of Uppsala University developed and popularized the concept as part of their work on understanding the success of foreign market development (Johanson & Wiedersheim-Paul, 1975; Johanson & Vahlne, 1977). The scholars of Uppsala defined the concept as "factors preventing or disturbing the flow of information between potential or actual suppliers and customers". Johanson & Vahlne developed in 1977 a model with which they tried to explain the internationalization process of the firm. The model was developed after having observed that the establishment of operations in new countries was related to the psychic distance between those countries. They observed a form of gradual or incremental internalization, where companies did not fully establish themselves until they had gained knowledge about the size and the nature of the market – knowledge that they gained through for example export experience or licensing experience.

The main structure of the model, developed by the scholars of Uppsala, is given by the distinction between the state and change aspect of internationalization variables. They argued that the present state of internationalization is one important factor explaining the course of following actions taken in terms of internationalization. In the state aspect they consider the resource commitment to the foreign market (market commitment) and the knowledge about foreign market and operations. The state aspect explains the resources committed to the foreign market and the knowledge about the foreign market possessed by the firm at a given time. The knowledge about the foreign market could be either general or market specific. General

knowledge concerns marketing methods and common characteristics of certain types of customers, regardless of their geographical location. The market-specific knowledge is the knowledge about the characteristics of a specific national market: its business climate, cultural patterns, structure of the market system, and, most importantly, the characteristics of the individual customer firms and their personnel. Market-specific knowledge is most likely obtained through interaction and experience with the market, where knowledge about the operation can be transferred from one country to another country. The commitment and knowledge at this given time is assumed to affect the firm's perceived opportunities and risk. There is a direct relation between market knowledge and market commitment. Knowledge is according Johanson & Vahlne (1977) a resource and consequently the better the knowledge about a market the more valuable are the resources, and thereby the stronger is the commitment to the foreign market. The change aspect considers the current activities and the decisions to commit resources to the foreign market. Current activities are the prime source of experience – experience that according Johanson & Vahlne (1977) has to be acquired through a long term learning process. The decision to commit resources to a foreign market is according the paper bound on the alternatives available and on how they are chosen. It is in their model assumed that decisions are made in response to perceived problems and/or opportunities in the market at the given time. These are in turn dependent on experience.

Overall the model states that firms mainly interact with foreign countries and markets, which are more familiar to them and with markets of which they have some kind of knowledge of and/or previous experience with. The notion of psychic distance, is according Johanson & Wiedersheim, (1975) and Johanson & Vahlne (1977), built on the idea that for managers knowledge and information is easier to collect and understand from certain countries than from others. Consequently, we argue that the concept of psychic distance should make certain countries more easily assessable for managers in relation to strategic decisions and cost estimation.

Psychic distance is primarily a cognitive category capturing the knowledge and information that decision-makers have on other countries at a given time (Håkanson & Ambos, 2010). Important factors are therefore the costs and the challenges associated with locating and obtaining the relevant and correct information regarding the market, and the existing business conditions in the foreign country. The psychic distance factors are characterized by country-specific differences and dissimilarities, and can be grouped into categories such as the following: *language differences, economic differences, geographical differences, cultural differences* and *differences in the political and legal systems* – the greater the barriers, the longer is the distance between two countries (Johanson & Wiedersheim-Paul, 1975). Psychic distance is according Johanson & Wiedersheim (1975) to some extent correlated with geographical distance. They postulate that two countries, which geographically are located very far apart, are less likely to influence each other; likewise countries that are geographically close are more likely to influence each other. For example the

Scandinavian countries (Denmark, Iceland, Norway, Sweden and Finland) are not very different in the their economic development, educational level, political and legal systems and cultural values. Furthermore, the countries are to some extent able to understand each other's languages. Though exceptions are to find; United Kingdom and Australia are very far apart geographically, but are for different reasons very close in terms of psychic distance. On the other hand, the US and Cuba are located geographically very close, but are for political reasons very far in terms of psychic distance. These examples indicate that psychic distance is not constant and that the exclusion of any one of the factors might have great implications (Johanson & Wiedersheim-Paul, 1975; Håkanson & Ambos, 2010).

The concept and definition has been widely debated, discussed and revised and it has been recognized that 'psychic distance factors' are not only determined by objective economic realities, but are also influenced by the availability of information and by the decision-makers' cognitive capabilities (Håkanson & Ambos, 2010) that will tend to vary with their personal background and previous experience, and will make him or her more or less sensitive to external stimuli (Dow & Karunaratna, 2006). Shenkar (2001) raises a related issue in that psychic distance between two countries may not be stable over time, homogeneous across firms nor markets. With these issues in mind psychic distance should ideally be measured by the perceptions of the decision-makers at the time the decision is made, however such an approach are nearly impossible. Researchers rarely have the opportunity of surveying the decision-makers perceptions prior to a strategic decision (Dow & Karunaratna, 2006). As previously mentioned managers make decisions based on their perceptions of the environment and previously experiences and thus, it is the manager's perception of psychic distance that is critical.

According the above reasoning, psychic distance will most likely affect the accuracy of the decision-making as the decision-makers perception and cognitive capabilities are challenged due to the psychic distance between countries. The decision-makers will have to make bounded rational decisions and cost estimations based on the information available at the time of the strategic decision-making without knowing precisely how the psychic distance, there exists between the geographically dispersed units as a consequence of offshoring, will affect the future business activities. Psychic distance will therefore most likely affect the accuracy of the decision-making, and thereby the cost estimation regarding foreign activities by preventing managers from making fully informed economically rational decision. However, when looking at the drivers for those perceptions, the exogenous national level of psychic distance stimuli, such as large differences in culture, language, religion, education, industrial development and political systems amongst countries, are almost certainly going to play an important role (Dow, 2009). We are aware that differences and variations exist within countries. However, as Dow & Karunaratna (2006) states in their research an average measure is appropriate if one is investigating the aggregate behavior across a population. This thesis therefore measures psychic distance at an average national level (objectively).

2.4.1. CAGE distance framework

In order to properly investigate the research question, five dimensions have been chosen to capture the effect of the psychic distance between countries. The five psychic distance factors are: culture, geographic, language, economic and politics, and this thesis will examine how differences in these distance factors affect the cost estimation failures related to offshoring. These factors have been chosen based on the CAGE distance framework. However, in contrary to the CAGE framework, which includes language differences in the psychic distance factor culture, we have chosen to separate language into a separate psychic factor of its own. Language differences is according to several researchers, such as Dow & Karunaratna, (2006), Dibbern et al., (2007), Welch et al., (2001) and Stringfellow et al., (2008), is a key component of psychic distance, which influences interaction, communication and international expansion patterns. Based on previous researches conducted by Aubert et al. (2009) and Dow & Karunaratna (2006), geographic distance is measured in two ways, both in terms of distance in kilometers and in terms of time zone differences. Table 4 provides more detail on each of the CAGE categories:

Table 4: CAGE Framework

	Cultural Distance	Administrative Distance	Geographic Distance	Economic Distance
Attributes creating distance	Different languages Different ethnicities Different religions Different social norms	Absence of colonial ties Absence of shared monetary or political association Political hostility Government policies Institutional weakness	Physical remoteness Lack of common border Lack of sea or river access Size of country Weak transportation or communication links Difference in climate	Differences in consumer income Differences in costs and quality of: • Natural resources • Financial resources • Human resources • Infrastructure • Intermediates inputs • Knowledge

Source: (Ghemawat, 2001)

The CAGE distance framework is developed by Pankaj Ghemawat (2001) and identifies cultural, administrative (also referred to as political distance and reflects the historical and present political and legal associations between trading partners), geographic and economic differences or distances between countries as factors that companies should address when planning international strategies.

Ghemawat (2001) emphasizes that the influence of the different types of distance factors to different extents depends on the industry and/or the product, and the framework helps managers identify and assess the impact of distance on various industries. For example, geographical distance affects the cost of transportation goods between home and host countries, and hence this is an important distance factor particularly for companies dealing with heavy or large products (production). On the other hand cultural difference affects

customer's product preferences, and companies selling consumer goods should take this into consideration.

The CAGE framework can, according Ghemawat (2001), help managers make the distance visible and identify the differences across countries that might complicate the processes for the multinational organization relative to local competitors. The framework can further help organizations to shed light on the relative position of multinationals from different countries. Hence, the framework helps managers identify and assess the impact of distance between home and host countries. By analyzing the possible impact of cultural, administrative, geographic and economic distance between home and host countries, managers can increase the likelihood of offshoring to profitable host countries and thereby decrease the likelihood of business failure.

To study how the psychic distance factors affect the hidden costs of offshoring, a theoretical explanation of each of the dimensions will in the following be presented, and a hypothesis of each of the dimensions will be formulated.

2.4.2. Cultural difference

Among the psychic distance factors, the factor that has been most widely used and discussed is the cultural distance between countries (Dow & Karunaratna, 2006). Sometimes the term has been treated as a synonym or even a proxy for psychic distance (Kogut & Singh, 1988). Culture, whether national or organizational, is among researchers, anthropologists and other behavioral scientists defined as "*a set of taken for granted assumptions, expectations, or rules for coexisting"* (Jacobsen & Thorsvik, 2002).

The culture concept emphasizes the shared cognitive approaches to reality that distinguishes a given group from others: it is the full range of learned human behavioral patterns. The term has been defined and redefined throughout time, where the most commonly used definitions of culture are (Jacobsen & Thorsvik, 2002):

> "Culture is the collective programming of the mind distinguishing the members of one group or category of people from others" Hofstede, 1973
>
> "Culture is a pattern of shared basic assumptions learned by a group as it solved its problems of external adaptation and internal integration (…) A product of joint learning" Schein, 1985

The organizational culture are therefore, based on the above definitions, a way of life among particular people where cognitive rules guides the behavior of the members. There exist no single culture or universal pattern – each society develops a cultural orientation that is descriptive of the attitudes of most of its individuals most of the time.

Between 1967 and 1973 Professor Geert Hofstede conducted one of the most comprehensive studies of how values in the workplace are influenced by culture. He executed a large survey study regarding national value

differences across the worldwide subsidiaries of IBM. Hofstede compared the answers of 117,000 IBM matched employees samples on the same attitude survey in different countries. The analysis identified that different national societies were very different in the way of dealing with power, inequality, uncertainty, the way of interacting in a primary group, and the emotional implications of having been born as a girl or as a boy. The study by Hofstede showed that national culture has a strong effect shaping the organizational culture (Hofstede, 1983). This implies that potential problems can arise when offshoring to a foreign country with a national culture not harmonizing with the one in the home country. These potential problems can arise due to the different ways of coping with challenges, such as inequality and/or uncertainty.

In relation to the decision-making and cost estimation it will be difficult to foresee how the employees at the offshore vendor are to handle potential challenges in the daily execution of the different business activities. How will the employees at the offshore vendor react to inequality? Will the offshore company's way of interacting in a group be harmonizing with the offshore vendor's way of interacting in a group? Or will this result in a cultural clash? How will the employees at the offshore vendor deal with hierarchy and authorities (power)? These reactions and ways of coping with the different challenges, which exist in doing business across countries, will in the strategic decision-making, be difficult to foresee. Due to the bounded knowledge regarding reactions to potential problems we argue that it will be difficult to accurately forecast exactly how much time and how many resources to allocate to this specific task, but also how many resources to allocate to the daily executive of the various business processes. As a result we therefore argue that cultural differences will increase the likelihood of cost estimation failures.

Culture shapes the attitudes of individuals and is in turn, continued by the actions, beliefs, and behaviors of individuals (Jacobsen & Thorsvik, 2002). As a result, culturally affected behavioral differences or disagreements may be observed when two cultural groups work together, as in the case of offshoring. A case study conducted by Dibbern et al. (2007) on offshoring from Anglo-American countries to India, for example indicated that opposing attitudes towards authority, hierarchy and power were likely to cause differences in criticism and feedback behavior between the offshore company and the employees at the offshore vendor. The Indian employees were very dependent on rules and had a high level of conformism, which in particular increased the offshore company's effort for specification, knowledge transfer and control.

The culture in an organization influences not only the behavior of the employees, but also the way employees communicate with each other and the way employees interpret information (Jacobsen & Thorsvik, 2002). While the diversity in work relations concerning cultural distance increases, it becomes more complicated and time consuming for the organization to manage and coordinate their projects. A shared culture ensures that the different parts of the organization all move in the same direction, sharing the same values, expectations and the same aims and objectives (Kogut & Singh, 1988; Hendry, 1995). Multiple researchers have suggested that when people from different cultures coexist in work relations,

misinterpretations are likely to occur (Dow & Karunaratna, 2006; Dibbern et al., 2007; Kumar et al., 2009; Aubert et al., 2009; Liu et al., 2011). Liu et al. (2011) argued that one way to reduce potential misunderstandings and to improve communication is to relocate activities to a country that are culturally similar as cultural proximity are to mitigate potential misunderstandings and lack of trust between the offshore company and the offshore vendor. Consequently, we argue that misinterpretations (1) makes it more difficult to arrive at a common understanding of the work object and (2) that it may limit effective communication and hence the responsiveness of the organization. Likewise we argue that this will make the adaption of a common business practice between any two countries more difficult and time consuming – extra time that could have been used solving the daily business tasks. The likelihood of misinterpretations will, before the implementation, be very difficult to forecast due to bounded rationality and uncertainty. How employees interpret a given information/assignment will not be revealed until the actual time of the assignment. It will therefore not be clear prior to the implementation how much time the offshore company is to spend on knowledge transfer and specification for the offshore vendor to execute the given task correctly. The offshore company can give the best possible estimate based on the knowledge they possess at the time for the cost estimation and resource allocation. However, as the bounded rational decision-makers only have limited information available of future events the likelihood of cost estimation failures will be present.

The cultural differences and the difference in behavior between the offshore company and the offshore vendor may result in reactions of the offshore company, reactions such as: increased effort for avoiding misunderstandings at the offshore vendor side, increased effort for knowledge transfer and knowledge sharing, more control in the different processes and increased coordination and monitoring to ensure that the contractual obligation are fulfilled by offshore vendor correct (Dow & Karunaratna, 2006; Dibbern et al., 2007; Aubert et al., 2009; Stringfellow et al., 2008; Kumar et al., 2009; Liu et al., 2011). The "extra" time used for coordination and monitoring, may very well be anticipated by the offshore company in the strategic decision-making process. However, despite the fact that the offshore companies anticipate that they are to use extra time (extra costs) for coordination and monitoring of the different business activities it does not imply that the offshore company are able to correctly estimate the exact amount of time needed as the decision-makers are subject to bounded rationality. We therefore argue that cultural differences between any two countries are likely to create uncertainty regarding the costs for monitoring and coordination and thereby the costs for all processes, where communication and the exchange of information and knowledge are required.

As described, several papers have concluded that differences in culture between home and host countries have an impact on the responsiveness of the organization. This thesis seeks to examine how cultural differences affect the accuracy of cost estimation of offshoring. Based on the above, we argue that firms that

offshore to cultural distant countries are more likely to incorrectly, estimate the costs of offshoring. Accordingly, we propose the following hypothesis:

Hypothesis #1: Cultural differences between home and host countries increase the likelihood of cost estimation failures of offshoring.

2.4.3. Language differences

The scientific study of language is called linguistics and it can be defined as the purely human and non-instinctive method of communicating ideas, emotions and desires by means of voluntarily produced symbols (Sapir, 1921). Today there are approximately 7,000 different spoken languages worldwide. A major language for a given country is defined as any language that can be spoken by more than 20% of the population, or a language that holds a special official status within the country, such as English in India and several African nations or French in Tunisia (Dow & Karunaratna, 2006). Language is according Dow & Karunaratna (2006), Håkanson & Ambos (2010) and Welch et al. (2001) a key component of psychic distance. Companies that have reached a substantial level of international operation in multiple language contexts face major challenges in terms of communication and information-flow among their diverse operations, locations and languages. The reason for this is that differences in languages between markets tend to increase the costs and the risks associated with foreign investments and/or transactions (Dow & Karunaratna, 2006; Dibbern et al., 2007; Welch et al, 2001).

A limited number of studies have included language differences in their empirical investigations of psychic distance. Dow & Karunaratna (2006) suggest that this could be related to the complexity of the construct and the lack of existing "language-scales". Dow & Karunaratna (2006) examines whether differences in language between countries will be negatively associated with the intensity of trade between countries, and they find that this is not always true. The statistical support of whether differences in language between countries will be negatively associated with the intensity of trade between countries depends on which sample of the population is examined (Dow & Karunaratna, 2006). Stringfellow et al. (2008) conducted a research on how language distance between countries can represent a barrier to effective interaction, and defines language distance as "*the barrier to communication introduced by the fact that the sender and the receiver do not share a common mother tongue*". The paper concludes that differences in language between the offshore company and the offshore vendor can lead to ineffective communication, which again might lead to an increase in the total costs of the offshoring implementation. Other studies examine how language influences the pattern of foreign market expansion and how firms try to cope with language diversity by adopting a common corporate language (Welch et al, 2001). Welch et al. (2001) separates countries into different language groups, and finds that there is a tendency for companies to expand into countries within the same language group first. By expanding into countries within the same language group first the companies are

able to minimize the risks and the communication problems associated with language differences between home and host countries. The paper by Welch et al. (2001) further focuses on other ways in which firms seek to avoid or minimize the impact of language differences as they internationalize. The paper finds that a common solution for many companies has been to adopt a shared corporate language, which most often has been English. In fact, a study from the Economist (2000) shows that the ability to speak and understand English is among the most important factors explaining the trading volume of a country.

In the strategic decision-making process the offshore company needs to integrate the challenges and uncertainties that the company might be facing in dealing with language differences between home and host countries. If the offshore company and the offshore vendor speak different languages, communication becomes more difficult, which complicates the knowledge transfer between the offshore company and the offshore vendor and thus increases the likelihood of misunderstandings and misinterpretations (Aubert et al., 2009; Dibbern et al., 2007). We argue that future difficulties in communication together with the costs associated with these difficulties, as a result of offshoring, will be difficult for the offshore company to correctly estimate as bounded rational decision-makers are not able to foresee and estimate all consequences. This may lead to cost estimation failures, as the company does not know precisely, which influence the differences in language between home and host countries will have. Furthermore, the increasing likelihood of misunderstandings and misinterpretations will likely increase the control and coordination costs since the company relies on effective communication, which is aggravated through language differences (Dibbern et al., 2007).

As described a number of papers have already examined the effect language differences have on trade between countries, and the challenges and communication problems these differences can lead to. This thesis seeks to examine how differences in language between the offshore company and the offshore vendor affect the cost estimation failures of offshoring. Based on the above we argue that firms, which offshore to linguistic distant countries are more likely to incorrectly, estimate the costs of offshoring. Accordingly, we propose the following hypothesis:

Hypothesis #2: Differences in languages between home and host countries will increase the likelihood of cost estimation failures of offshoring.

2.4.4. Political differences

Politics can be defined as the activities associated with the governance of a country or area, especially the debate between parties having power (Oxford Dictionaries, 2014). Politics, inside companies, are the observable, but often covert, actions by which executives enhance their power to influence the decision (Eisenhardt & Buorgeois, 1988). These actions include behind-the-scenes coalition formation, offline

lobbying and co-optation attempts, withholding information and controlling agendas. Governance consists, according the Worldwide Governance Indicators (WGI), of the traditions and institutions by which authority in a country is exercised. This includes the process by which governments are selected, monitored and replaced; the capacity of the government to effectively formulate and implement sound policies; and the respect of citizens and the state for the institutions that govern economic and social interactions among them.

Several researches has incorporated politics into their researches focusing on how politics influence the decision-making within firms and on how political differences affects the costs associated with relocating firm activities abroad. However, some researchers have also focused on how integrating political analysis can provide new insights into cross-cultural analysis. Researchers such as Eisenhardt & Bourgeois (1988) examine how politics can affect the strategic decision-making processes; Bekefi & Epstein (2006) examine how managers more effectively can integrate political risk into their decision-making processes to be better able to effectively manage the risk associated with political differences; Dow & Karunaratna (2006) focus on how differences in political systems influences managers; and van Es & Pels (2010) focus on how political analysis can provide new insights into cross-cultural analysis in the attempt to grasp how conflicts are handled

In an increasingly globalized world, integrating political differences is critical to effectively manage a company's real risk, since differences in politics between countries and/or political instability can increase the risk that a company might be facing (Bekefi & Epstein, 2006; Dow & Karunaratna, 2006). Generally, risk can be described as any event or action that will adversely affect a company's ability to achieve its business objectives and successfully execute its strategies (Bekefi & Epstein, 2006), and relates to the probability that exposure to a hazard will have negative consequences. Political risk can be understood as the execution of political power in a way that threatens a company's value, if not accounted for it can be devastating for the operations of the company (Bekefi & Epstein, 2006). There are two types of political risk that are relevant to companies doing business internationally: firm-specific political risk and country-specific political risk (Bekefi & Epstein, 2006; Dow & Karunaratna, 2006). A single firm experiences firm-specific political risk, whereas country-specific political risk can have an impact on multiple firms doing business in a given country. Country-specific political risk can include a civil war, corruption, drastic changes in foreign currency rules, or sweeping changes to the tax code. These types of risks can be generated directly from the host country government, or emerge from an unstable social situation within the country – either way the offshoring company should try to understand the potential political risk of the host country to be able to understand the risks the company could potentially face (Bekefi & Epstein, 2006; Dow & Karunaratna, 2006).

Dow & Karunaratna (2006) focus on how differences in political systems can potentially influence managers at two levels. Most industries involve a significant amount of government-to-business and business-to-

government communication, and dramatic differences in political systems will tend to increase costs and uncertainty of such communication. Furthermore, governments play a key role in policing various business-to-business and business-to-consumer interactions, such as the execution of contracts and monitoring of the anti-competitive behavior. Differences in political systems can therefore lead to an increase of the risk that the bounded rational decision-makers of the offshore company might misjudge how a government is likely to react in specific situations, and how other firms is likely to react as a consequence of any potential government intervention (Dow & Karunaratna, 2006). Both of these occurrences have the potential to increase the costs and the risks of doing business in a foreign country. These findings are consistent with the research conducted by van Es & Pels (2010). Their research highlights that different political believes of countries leads to different ways of handling conflicts and moral misbehavior. Further the researchers emphasize that the importance and the power the government possess varies among countries (van Es & Pels, 2010).

Based on the above, we argue that it is essential for the offshoring company to integrate political differences between the home and the host countries in the strategic decision-making process to effectively manage the company's real risk and the costs associated with the offshore decision. It is essential for the companies to integrate, as differences in political systems may lead to an increased risk of miscommunication, misjudgment and misinterpretation, by the decision-makers in the offshoring company, i.e. of how a government or foreign firms is likely to react on political issues and situations. We argue that it will be difficult for the bounded rational decision-makers to estimate the actual costs associated with differences in political systems. This may lead to cost estimation failures, as the company does not know precisely, which influence the political difference between the home and the host country can have.

As described, a number of papers have already concluded that political differences and the associated political risks have an impact on the decision-making effectiveness and the cost estimation. This thesis seeks to examine how political differences affect the cost estimation failures of offshoring. Based on the above we argue that firms, which offshore to political distant countries are more likely to incorrectly, estimate the costs of offshoring. Accordingly, we propose the following hypothesis:

Hypothesis #3: Differences in politics between home and host countries increases the likelihood of cost estimation failures of offshoring.

2.4.5. Geographic distance and time zone differences

The geographic dimension of distance designates the space and time separating the physical locations of organizations, suppliers, partners, and clients (Aubert et al., 2009). All offshoring activities involve at least some geographic distance, and hence one key aspect of offshoring is the choice of location. Various papers have been written about offshoring and the impact of geographical distance (Dow & Karunaratna, 2006; Dibbern et al., 2007; Stringfellow et al., 2008; Aubert et al., 2009; Kumar et al., 2009). Prior research suggests that the availability of expertise and low cost labor are major location choice factors, whereas geographical distance does not matter much because of the advancement of IT (Aubert et al., 2009). However, the research by Manning et al. (2008) emphasizes that geographical closeness (together with the access to talent pools and external expertise) still is an important factor to consider in the strategic decision-making regarding the locational choice of the companies' offshoring activities. Manning et al. (2008) further emphasizes that whether a company chooses to offshore to a near-shore or a far-shore location depends upon the offshored activity and the location of the home country.

When analyzing the impact of geographical distance especially two major dimensions of geographical remoteness has been used, namely geographic distance in kilometers and time-zone differences (Dow & Karunaratna, 2006; Aubert et al., 2009).

The geographic dimension of distance is seen to increase the cost of trade and is often treated as a risk factor in the literature – both in terms of geographic distance in kilometers and in terms of differences in time zones between home and host countries (Aubert et al., 2009). Geographic distance affects the availability of effective communication channels, since an increase in geographic distance measured in kilometers makes face-to-face meetings and communication more difficult and costly, which may increase costs. Hence, the geographic distance creates barriers to face-to-face communication and direct interaction between the offshore company and the offshore vendor, which negatively influences the coordination and collaboration between them (Stringfellow et al., 2008; Dibbern et al., 2007). This is particularly true if a high amount of firm-specific knowledge is needed, since this often requires the transfer of tacit knowledge, which is best acquired through a process of socialization via face-to-face meetings (Dibbern et al., 2007; Stringfellow et al., 2008). Geographic distance makes such face-to-face meetings more difficult and more costly, which may increase costs if not anticipated in the strategic decision-making and the costs estimation process. Further, Kumar et al. (2009) highlights, that physical proximity allows for observation and directly monitoring of the work object together with real-time communication and adjustments with the other actors face-to-face.

Stringfellow et al. (2008) further emphasizes that geographic distance increases the risk of asymmetry of information between the offshore company and the offshore vendor, with the risk of incorrect execution of the business tasks due to the lack of face-to-face communication. Time zone differences compound the issue of distance in kilometers, and for this reason firms sometimes choose to offshore their activities into the

same, or a nearby, time zone (Aubert et al., 2009). Time zone differences impact interaction, since time zone differences determine whether service providers and customers are awake at the same time and are present at their respective offices at the same time. Differences in time zones are not likely to disrupt the interpretation of information, but they do create uncertainty about the ability for rapid communication (i.e., resolving an urgent problem), if and when it is needed (Dow & Karunaratna, 2006). However, time zone differences sometimes may also be an asset for companies and constitute an incentive to offshore, since differences in time zones may allow companies to switch around-the-clock operations in order to fast-track projects or offer 24-hour service to their customers (Aubert et al., 2009).

The advancement of IT and communication technologies, such as video conferencing, e-mail and groupware tools that support virtual collaborative work, has increasingly substituted the need for physical presence, hence reduced the communication problems with geographic distances (Dibbern et al., 2007). Even though there are still complications and risks associated with geographical distance and time zone differences between the offshore company and the offshore vendor. Since all offshore activities involve at least some geographic distance, it is critical for the offshore company to integrate the complications and the challenges related to geographical distance and time zone differences in the strategic decision-making to be able to estimate the actual costs of offshoring. In the strategic decision-making process it is assessed that the offshoring company quite easily can estimate the actual transportation and travel costs as of today, however as transportation costs, and the implicit oil prices, in the moment are highly volatile it is difficult due to bounded rationality to predict the future costs of transportation (Goel et al., 2008).

In addition to the increase in the cost of transportation, we argue that the geographic distance that follows from offshoring involves a number of challenges and unanticipated or hidden costs. These challenges and hidden costs can for example arise from miscommunication and asymmetry of information between the offshore company and offshore vendor. Further incorrect execution of the business tasks due to the lack of face-to-face communication and physical supervision can also be a risk for the offshore company. In the strategic decision-making process it is difficult to estimate and foresee the number of face-to-face meetings between the offshore company and the offshore vendor needed, to be able to execute the business activities satisfactorily and efficiently. Geographical distance further increases the lack of control that the management has at the offshore vendor, since face-to-face meetings does not occur as often as in the home country. The costs associated with this lack of control are for the offshore company difficult to estimate, since the decision-makers are subject to bounded rationality of what this lack of control will cause.

As described a number of papers have already examined geographical distances and time zone differences between the offshore companies and the offshore vendors. This thesis seeks to examine how geographical distances and time zone differences between the offshore company and the offshore vendor affects the cost estimation failures.

Based on the above we argue that firms, which offshore to geographical distant countries are more likely to incorrectly, estimate the costs of offshoring. Accordingly, we propose the following hypotheses:

One for geographical distance:

Hypothesis #4a: Geographical distance between countries will increase the likelihood of cost estimation failures of offshoring.

And one for time zone differences:

Hypothesis #4b: Time zone differences between countries will increase the likelihood cost estimation failures of offshoring.

2.4.6. Economic development

The objective of this thesis was to examine how economic differences between home and host countries affect the cost estimation failures of offshoring. However, we have chosen to investigate economic development instead, as we have not been able to find enough prior research to underpin that economic difference could have a potential effect on the cost estimation failures of offshoring. The existent literature rather point in the direction that it is the uncertainty and unpredictability of the economic development that may affect the cost estimation failures.

A factor of hidden costs, which has been showing substantial impact over the past years, is the potential increase in labor costs caused by changes in the economic environment of the host countries (Goel et al., 2008; Holweg et al., 2010). The economic environment in many developing countries has experienced a positive development over the past years (World Bank, 2014), which has given rise to increasingly labor costs in many of these developing countries. The offshore companies may find that prices have increased so much in the host countries that the company need to search for new offshore vendors or suppliers – leading to additional transaction costs (Holweg et al., 2010). Offshore companies can try to forecast the host countries economic development based on the countries previous development. However, this development may be difficult for managers to forecast in the decision-making process of offshoring as economic development to some extent is unpredictable due to external factors and due to bounded knowledge about the future. Furthermore, if it takes years for the company to implement their offshoring activities in the host countries, then it will make the estimations of future growth even more difficult, as the offshore company need to forecast additional years.

Based on the above the economic development in host countries can potentially lead to cost estimation failures of offshoring. Economic development can be defined as an increase in the capacity of an economy to produce goods and services, compared from one period to another (Oxford Dictionaries, 2014). Economic development can be measured in a number of ways – it can be measured in nominal terms, which include inflation, or in real terms, which are adjusted for inflation. When comparing one country's economic growth to other countries', GDP or GNI per capita is the best suitable measures, since these measures take into account the population differences between countries (Oxford Dictionaries, 2014). The research by Ghemawat (2001) find a positive correlation between GDP per capita and trade flows, and suggest that developed (rich) countries engage in relatively more international economic activity relative to their economic size compared to the more undeveloped (poorer) countries. Companies that rely on economies of experience, scale and standardization should focus their trade more on host countries that have similar economic profiles, since these companies have to replicate their existing business model to exploit their competitive advantages. This can be challenging for companies to establish in countries where customer incomes and the cost and quality of resources are very different. Competitive advantages, in other companies, come from economic arbitrage – the exploitation of differences in costs and prices between home and host countries. These companies search for cost reductions and are hence most likely to target developing countries with different economic profiles for doing foreign direct investments or trade (Ghemawat, 2001).

Based on the above we argue that changes in the economic environment in countries may influence the cost level within the country. Changes in cost levels can affect the profitability of offshore decisions, and if bounded rational decision-makers are not able to account for uncertainties regarding future cost levels, then potential changes might lead to cost estimation failures. Inspired by Holweg et al. (2010) and Håkanson & Ambos (2010), this thesis study economic development in terms of the development in GDP per capita in host countries as the indicator of economic development.

We are aware of that investigating economic development in host countries instead of examining differences in economic development between home and host countries, are not completely aligned with the research question of this thesis. However, as we have chosen the psychic distance factors in this thesis based on the CAGE framework, which include economic distance, we choose to include economic development. Accordingly, we propose the following hypothesis:

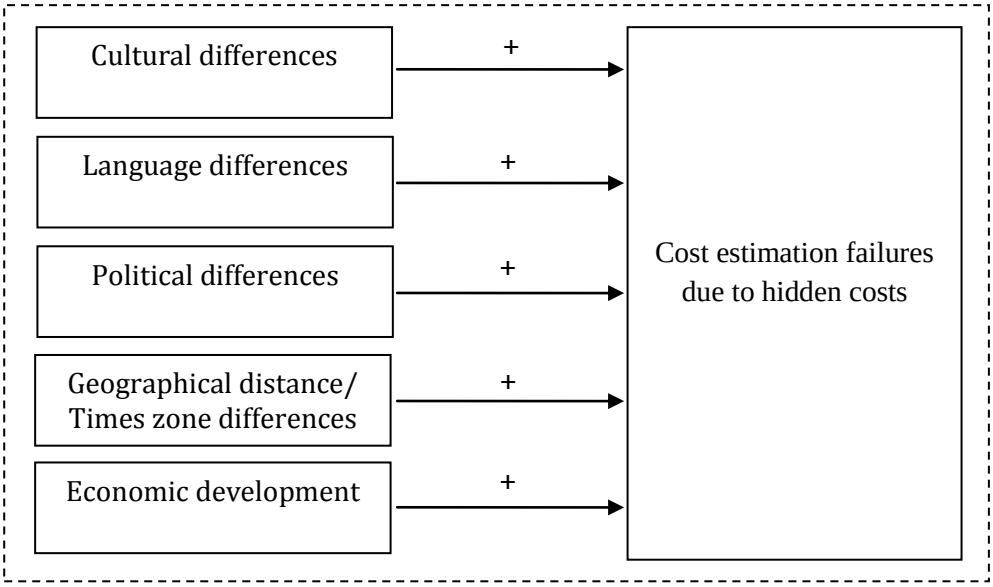
Hypothesis #5: Economic development in the host country will increase the likelihood of cost estimation failures of offshoring.

2.5. Concluding remarks

This thesis seeks to investigate the relationship between cost estimation failures and the psychic distance between countries. Consequently, we seek to contribute to the existent literature on cost estimation failures and strategic decision-making. We however also seek to highlight whether or not it is important for organizations to incorporate psychic distance into the strategic decision-making and cost estimation of their offshore decisions.

To sum up, our hypotheses are to affect the likelihood of cost estimation failures as followed:

Figure 3: Hypotheses overview



Source: Own making

To further substantiate the relevance of investigating the hypotheses of this thesis, and hence how psychic distance factors between home and host countries affect the likelihood of cost estimation failures, two real life examples of how psychic distance has affected the success of an offshoring decision will in the following be presented.

2.6. Real life examples

In this section two real-life examples of how psychic distance has affected the success of the decision to relocate activities across borders will be presented. The first example concerns the American corporation Dell Inc., where the example primarily is built upon a case study concerning Dell's call-center in India (Case Study Inc., 2010; McCue, 2004). The second example concerns the Danish corporation KMD A/S, where the example primarily is built upon an interview with Rikke Vinther, the Danish chief of development at KMD. Both companies have relocated business activities to India where both the companies experienced significant challenges in implementing and managing a globally dispersed organization – challenges which resulted in higher costs than anticipated.

2.6.1. Example I: Dell Inc.

IT Company Dell Inc. is an American privately owned multinational computer company based in Round Rock, Texas, US. Dell develops, sells, repairs and supports computers, related products and services all around the world. The company is one of the largest technological corporations in the world, employing more than 103,300 people worldwide. In 1987 Dell opened their first international subsidiary in the United Kingdom and only three years later the company opened a manufacturing center in Limerick, Ireland, to better serve customers in Europe, the Middle East and Africa. In the following years Dell continued to open new manufacturing plants and customer centers and in 1995 Dell was present in multiple countries within Europe, Asia, Japan and the US. Dell had in only a few years gained momentum in the international stages and was also one of the first organizations to move customer support functions to India to benefit and take advantage of the cheap labor available. Dell opened their first call center in Bangalore, India in 2001 to provide technical support for the customers in US. After two years Dell established their second customer contact center in Hyderabad to deal with the increase in their customer base, and only a few years later Dell opened a third call center in Chandigarh metro area in the north of India. Although Dell had established many call centers in India and was very experienced dealing with international operations, the company faced significant challenges.

The market share of Dell continued to grow, however, customer satisfaction suddenly dropped dramatically. Dell had experienced many complaints from customers, mainly due to poor quality of service. Some U.S. customers complained that it was difficult to communicate with the Indian technical support representatives because of their poor English skills and scripted responses. Further some customers complained that they had experienced difficulties in reaching senior technicians when speaking to technical support employees in India. After having encountered a number of challenges, Dell decided to back-source their activities in Bangalore, India only two years after the implementation was finalized. Dell moved the support operations to its call centers in Texas, Idaho and Tennessee to take the activities back under control.

Romi Malhotra, the director of Dell's Indian operations stated in an interview that Dell had encountered four main challenges: Talent constraint challenges, retention challenges, technical challenges and challenges associated with linguistic and cultural differences.

Talent constraint challenges/Retention challenges

The call center in India needed a large volume of employees due to the large volume of calls. Although India is a large country with a large amount of available labor, Dell had difficulties in finding the right employees and keeping them. Dell was not the only company, which at that moment had offshored operations to India. A high demand for local workers together with a general low wage paid by Dell led to a high employee-turnover rate. This resulted in unexpected costs for Dell, since they needed to train a higher amount of

employees than expected. The geographical distance between America and India complicated the training of the new personnel, which resulted in even increasingly costs for transportation.

Technological challenges
Dell is a multinational information technology (IT) corporation that has been growing a lot over the years and as technology keeps changing their products gets more complicated which results in a growing number of additional product lines. The skills of the staff therefore needed to be improved so that they were capable of answering the customers' questions. Dell had not successfully planned this extra training of the employees. Consequently, calls were transferred to different skilled technicians because their regular service employees were not able to answer the questions. This transfer between different employees resulted in an increased waiting time for the customers, which led to increasingly customer dissatisfaction.

Language and cultural differences
Beside customer dissatisfaction as to the English skills, Dell also encountered cultural challenges. Most of the customers that the call center in India served were Americans, and Dell experienced that the Americans expected a clear and straight forward answer, whereas the Indians tended to answer in a lengthen and detailed way. Furthermore Dell faced challenges with getting the employees, who was send to India, to understand the culture and work procedures in India. According Romi Malhotra it was not easy to find the right people in India and teach them about the culture of Dell. Thereby Dell experienced that they needed to train the staff in the call center not only regarding the culture of Dell, but also regarding the culture of the customers that they were serving.

The case of Dell highlights the importance of incorporating the psychic distance factors into the strategic decision-making and the cost estimation process. After having offshored their call center activities to India, Dell Inc. realized that managing a geographically dispersed organization where more complicated and costly than initially anticipated. For Dell Inc. it resulted in dissatisfaction among their customers and consequently the company moved back their activities to the US.

2.6.2. Example II: KMD A/S
KMD A/S is one of Denmark's largest IT and software companies, with branches in Copenhagen, Aarhus, Odense and Aalborg. The majority of KMD's business derives from software development, and the company develops and delivers IT solutions for the local government, central government and the private markets. For 40 years KMD has played a key role in digitizing the Danish welfare state and has played its part in Denmark's public sector emerging today as one of the most efficient and digitized public sectors in the world.

KMD is a Danish IT company but its special insight also offers enormous potential beyond Denmark's borders. In autumn 2010 KMD opened a subsidiary in Sweden, with the goal to help develop the customer base in the Nordic region. In February 2006 KMD entered into a strategic partnership with the Indian IT

company Satyam Computer Services. The internationalization-goal for KMD was to take advantage of global sourcing in areas where local recruiting is challenged. Further as it is difficult to maintain long-term competences, the ability to scale capacity is crucial and cost reductions are therefore critical to stay in and/or win new business. The Indian IT company provided KMD with much needed extra hands in SAP (an Enterprise Resource Planning system) programming, which allowed KMD to achieve a greater growth in the SAP development area. KMD were therefore able to offer its customers a reduced time to market, which was not previously possible due to the limited work pool of Danish SAP programmers.

The most recently strategic SAP implementation made by KMD was made in 2013 and involved both employees in Denmark, Sweden and in India. Rikke Vinter, the Danish chief of development at KMD, led the implementation. Rikke Vinther had experience with some of KMD's previous offshoring decisions and had before been assigned to a project involving Indian workers. KMD's motivation for relocating activities to India was mainly based on the low costs benefit they could gain, but also to access a pool of skilled labor the company could not access in Denmark. However, KMD never succeeded with this offshoring implementation, and the company experiences that the actual costs associated with the implementation exceeded the estimated. Recently KMD needed to move the relocated activities back to Denmark.

The higher costs were a result of incorrect cost estimations in the decision-making process. These incorrect estimations were due to a number of unforeseen operational challenges, which the company did not expect and accordingly did not account for in the strategic decision-making. Rikke Vinther stated that KMD have not been good enough to estimate the actual costs of offshoring in their decision-making, as they did not estimate the costs associated with increasing labor turnover. Further KMD was not good enough to estimate the actual costs associated with language and cultural differences between, India, Denmark and Sweden and consequently KMD experienced hidden costs after the relocation to India. Hence, KMD had encountered three key factors that were difficult for KMD to correctly cost estimate, resulting in costs estimation failures. The three key factors for KMD was: increasing labor costs due to higher employee turnover, cultural and language differences

Increasing labor costs

The Indian market has developed substantially since the first offshore implementation was executed by KMD. Rikke Vinther states that during the years the labor costs in India have increased significantly – especially compared to the Danish labor costs. A reason for the increase can be seen based on the increasing demand for labor in India. The Indian workers are, according Rikke Vinther, very motivated by payments, and the labor turnover is hence high, since the workers change jobs to where they can earn the most. This lead to increasing employee turnover, which lead to higher labor costs that KMD did not account for in their cost estimation.

Language differences
The language barriers between India and Denmark were according Rikke Vinther not a problem. Rikke Vinther had previous experience working with Indian employees and consequently previously experience understanding their Indian-English. However, the Swedish employees had more difficulties in understanding the Indian-English; both because of lack of previous work with the Indian workers, but also because the Swedish workers, according Rikke Vinther, did not possess the same language/English skills as the Danish workers assigned to the implementation. These language barriers between the Swedish and the Indian employees lead to communication problems, which KMD had not accounted for as they expected that the Danish and the Swedish employees possessed the same language skills.

Cultural differences
KMD experienced problems with the offshore workers skills and their ability to fulfill the orders and assignments that they were assigned. KMD experienced problems with one of the two assigned SAP developers, as the quality of the work did not live up to expectations. At the same time the work was not compliant with what KMD had demanded, and at the end KMD needed to discard all of the work that had been conducted by the developer. That the skills of the developer did not live up to the expectations was according Rikke Vinther not a unique case. According Rikke Vinther the mentality of Indian employees regarding writing CV's is much different than the mentality of Danish employees. The likelihood of a miss-match between the skills written in the CV and the actual skills possessed are according Rikke Vinther likely to deviate. This factor plays an important part when hiring people and it is a factor that needs to be taken into consideration. Consequently, Rikke Vinther hired an Indian assistant to help her recruit the correct people, as the Indian assistant possessed a more in-depth understanding of the mentality of the Indian employees and their CV's.

Further it is, according Rikke Vinther, not a part of the Indian mentality to say no to an assignment. Hence, when allocating resources and assignments KMD could not be sure that the Indian workers had understood the given assignment correctly or that they were able to perform the assignment in the time given. As a consequence KMD experienced higher cost level than initially expected, as the Indian workers did not possess the correct skills and consequently needed more time and training for completing the given assignments.

The case of KMD highlights the importance of incorporating the psychic distance factors into the strategic decision-making and the cost estimation process. The costs associated with KMD's offshore decision turned out to be higher than expected, where KMD needed to move the relocated activities back to Denmark as it were more profitable for KMD to use Danish SAP programmers even though it would generate higher labor costs.

3. Research methodology

Having highlighted in the previous sections how psychic distance theoretically affects cost estimation failures and proposed a set of hypotheses, this section will discuss the research methodology applied in this thesis.

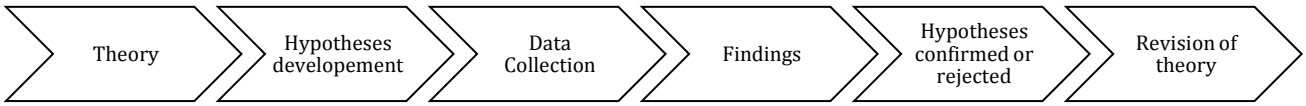
The first part, the research design, will describe the research approach and the strategy applied. The second part, the data description, consists of an in debt description of the primary data used together with a short presentation of the secondary data sources. The third part will operationalize the different variables included in the regression models. The fourth part, the data quality, will assess the validity and reliability of this research. The final part of this section will outline the econometric specification used in this thesis.

3.1. Research design

In the following section, the research methodology of this thesis will be presented. More precisely, the research approach and strategy of this thesis will be outlined.

In science there are two main ways of arriving at a conclusion: deductive reasoning and inductive reasoning. Deductive reasoning happens when a researcher works from the more general information to the more specific, whereas inductive reasoning works the opposite way, moving from specific observations to broader generalizations and theories. The hypotheses of how psychic distance affects cost estimation failures related to offshoring has been deduced on the basis of what is already known about the two phenomena and consequently, this thesis has used the deductive approach of knowledge creation (Bryman & Bell, 2007). The sequence of deductive reasoning is depicted in figure 4.

Figure 4: The process of deduction



Source: Bryman & Bell (2007)

In collecting data for this thesis a quantitative method using a survey from the Global Operation Network (GONe) together with other numerical data were applied. Quantitative research method is the collection of numerical data. It is a method that attempt to maximize objectivity and generalizability of findings, and are typically interested in predictions. Surveys is a popular and common strategy in business and management research and is most frequently used to address the: who, what, where, when and how of any given topic or issue. Surveys offer the researcher a highly economical way of collecting large amounts of quantitative data. The data can be analyzed using descriptive and inferential statistics. As the objective of this thesis is to produce a statistical model that predicts the relationship between cost estimation and psychic distance, surveys are assessed to be an appropriate way of collecting data. The limitation of surveys is however, that the technique is not as wide-ranging as other forms of research strategies. The questions are pre-set and the

individual perceptions and interpretations of the respondents will affect the answers (Bryman & Bell, 2007). The data from the survey can be characterized as cross-sectional data, as cross-sectional data are data collected by sampling a population at a given point in time (Gujarati & Porter, 2009).

To sum up, this thesis follows a quantitative approach, where the deductive reasoning is used to logically evaluate and explain the cost estimation failures of offshoring. This means that we from a limited number of observations will try to generalize and predict the existence of cost estimation failures as a consequence of hidden costs. We have formulated a number of relevant hypotheses based on theoretical evidence, and these hypotheses will be tested both on a survey data from the Global Operation Network (GONe) that collected data on Danish and Swedish companies' offshoring activities, and on other secondary data.

3.2. Data description

The data used for conducting the research of how specific psychic distance factors affect the cost estimation failures of offshoring have been collected from different sources. The following sections will outline the primary and secondary data sources.

3.2.1. Primary data

The previously formulated hypotheses are primarily tested on a dataset based on a survey from the Global Operation Network (GONe) survey. This research is therefore based on secondary data, as the hypotheses are tested on already existing data, and not data we ourselves have collected. We would like to inform the reader that the supervisor of this thesis, Marcus Møller Larsen, was lead investigator in collecting this data.

The Global Operation Network is a research network of a number of Scandinavian universities established in 2009 to study industries and companies that have been intensively exposed to globalization. The survey used for this thesis collects data on Danish and Swedish companies, and focuses on the process of relocating activities from Denmark and Sweden to foreign locations. The population of the study consists of all Danish firms across industries with more than 50 employees (2,908 companies) and all Swedish manufacturing firms with more than 50 employees (1,549 companies). The survey was conducted among these 4,457 companies in the time period from September 2011 to January 2012, where the CEOs of the companies were per postal mail and e-mail invited to participate in an online survey. This analysis will be based only on the Danish companies, as we did not have access to data from the Swedish companies.

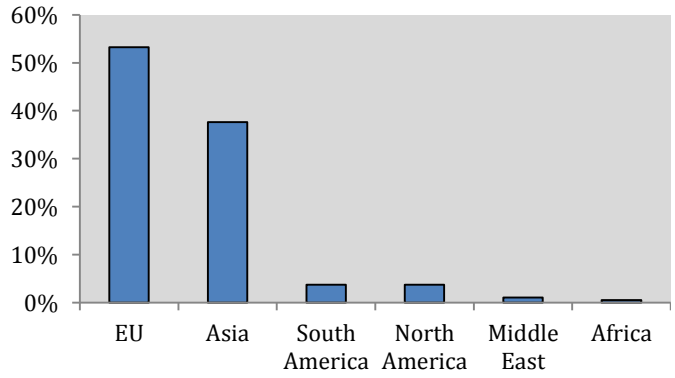
The purpose of this thesis is to investigate how the psychic distance factors affect the cost estimation failures of offshoring. For this reason the main focus in the following presentation will therefore be put on the hidden costs and the unexpected challenges associated with the relocation.

In the survey, the respondents were among other questions asked about the characteristics of their offshoring implementations, the coordination of the offshoring activities, the unexpected challenges associated with the offshore decision, and also on how they experienced the difference between the expected and the actual costs

associated with their offshore implementation. All in all, 675 questionnaires were received from Danish companies, out of which 229 Danish companies reported that they have experience with offshoring (34%). This study only draws on responses from companies with offshoring experience.

Figure 5 and table 5 illustrates which regions the Danish companies have relocated activities to and which activities that has primarily been relocated to the different regions, respectively. As illustrated, the Danish offshoring companies from the survey have primarily offshored to countries within Europe (53%) and Asia (38%). Less than 10% have relocated activities to North America, South America, Africa and the Middle East. These findings are not unexpected. The fact that Danish companies mainly offshore to other European countries are consistent with the theory of psychic distance, i.e. companies offshore to countries that are close in terms of psychic distance (Johanson & Wiedersheim-Paul, 1975; Johanson & Vahlne, 1977). That Asia is the region where the companies second most offshores to, can hence be explained by the companies search for cost reductions. The availability of highly educated and relatively inexpensive manpower in emerging economies such as India and China makes a compelling economic argument for relocating activities to those regions (Kumar et al., 2009).

Figure 5: Region



Source: GONe survey

Table 5 illustrates the type of activity that has been relocated to the different regions. As seen from the figure production is the primarily task that is offshored in all regions (55%). This finding is not surprising as many companies offshore in the search for costs reductions, especially in the search for low cost labor (production activities are seen to be labor intensive). However, the offshoring of service/administration and R&D (e.g. product design, product development, and software development) has a significant share of the total offshoring activities in all of the regions, besides Africa. This finding is also consistent with the resent studies of offshoring, where these activities are currently gaining momentum (Manning et al., 2008).

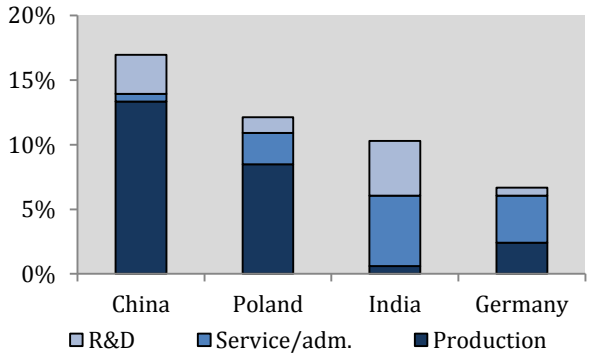
Table 5: Region and activity

Region	Total	Production	Service/adm.	R&D
Asia	38%	51%	22%	28%
EU	53%	58%	28%	14%
North America	4%	71%	0%	29%
South America	4%	71%	29%	0%
Middle East	1%	50%	50%	0%
Africa	1%	100%	0%	0%
Total	100%	57%	25%	19%

Source: GONe survey

The companies asked in this survey offshore to 41 different countries (see appendix 1), where China (17%), Poland (12%), India (10%) and Germany (7%) are the most frequently used locations for offshoring. As there exist no data for Hofstede and POLCON for Greenland the country has been removed from the dataset and only 40 different countries will be applied in the regression analyses. The exclusion of Greenland is not assessed to change the findings of this thesis as only two firms have used Greenland as an offshore location. Figure 6 illustrates this allocation of the relocated activities among the four countries China, Poland, India and Germany.

Figure 6: Countries



Source: GONe survey

The figure illustrates that Poland and China are the main locations for production, whereas it is more common to offshore service and administration activities to India. Finally R&D activities are most often seen to be offshored to either India or China.

Table 6 illustrates the allocation of industries among the respondents. The table clearly shows that the main part of the offshoring companies from the survey are companies in the manufacturing industry (46%), and a larger part of the companies are in the "Wholesale and retail trade" and "Information and communication" industry, accounting for a share of 14% and 12%, respectively.

Table 6: Industry

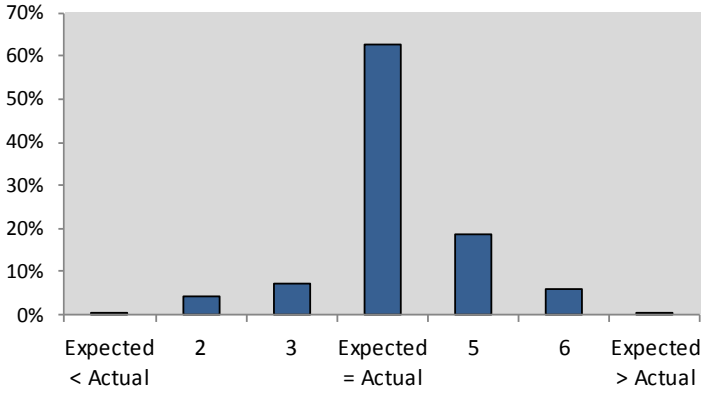
Industry	Total	Production	Service/adm.	R&D
Manufacturing	46%	79%	11%	10%
Wholesale and retail trade	14%	52%	37%	11%
Information and communication	12%	21%	29%	50%
Professional, scientific and technical activities	9%	29%	29%	41%
Financial and insurance activities	7%	23%	31%	46%
Transportation and storage	5%	30%	60%	10%
Administrative and support service activities	3%	33%	67%	0%
Mining and quarrying	2%	0%	100%	0%
Human health and social work activities	1%	50%	50%	0%
Agriculture, forestry and fishing	1%	100%	0%	0%
Construction	1%	100%	0%	0%
Real estate activities	1%	0%	0%	100%
Total	100%	55%	26%	20%

Source: GONe survey

That the offshoring companies primarily originate from the manufacturing industry, and that 79% of their offshoring activities are production, is not surprisingly. According previous researches and the theoretical foundation of this thesis, the main motivation behind companies' offshore decisions are the search for low cost labor and production costs. As manufacturing companies primarily rely on labor and production this finding is consistent with the theoretical foundation.

In the survey the companies were asked on a Likert scale from 1-7 whether they experienced any difference between the expected costs and the actual costs associated with their offshoring activities. Out of the 229 Danish companies that responded on the survey 186 answered the question of whether they experienced any difference between the expected and the actual cost level. 47 of these companies (25%) answered that they had experienced hidden costs of offshoring – costs higher than they expected.

Figure 7: Level of hidden costs



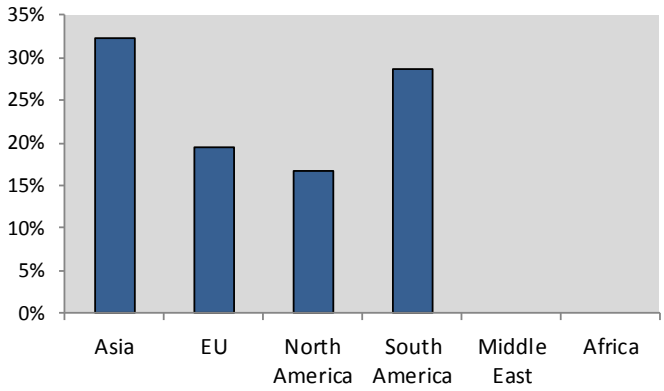
Source: GONe survey

Figure 7 illustrates the allocation of the existence of hidden costs. 11.8% of the respondents reported that the actual costs were lower than the initially anticipated costs, 62.9% of the respondents reported that the actual

costs met the initially anticipated costs, and 25.3% of the respondents reported that the actual costs were higher than the initially anticipated costs, where 10 % experienced significant hidden costs (answer 6+7).

Figure 8 illustrates the existence of hidden costs as of region. As seen from the figure, hidden costs have been experienced in the four regions: Asia, Europe, and, North and South America. This is not surprising as these regions are the four regions that have received most of the relocated activities (only 2% of the asked companies have relocated activities to the Middle East and Africa).

Figure 8: Hidden costs as of region



Source: GONe survey

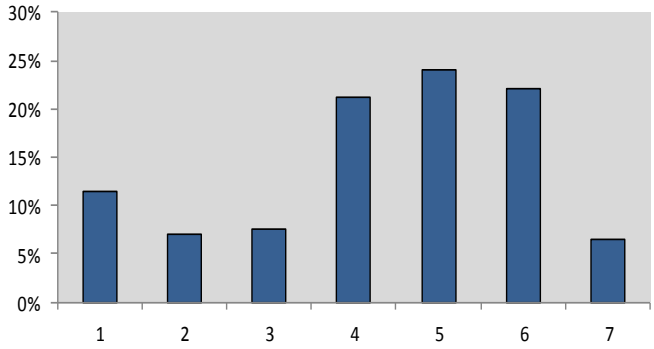
As stated in the theoretical section, particularly unexpected challenges and increased complexity in managing a globally dispersed organization are to have an effect on cost estimation failures. The next paragraph will therefore present an assessment of the complexity within the company after having offshored activities to a foreign location and a presentation of the surprising challenges that the respondents experienced after having relocated activities.

In the survey the respondents were asked on a Likert scale from 1-7 (1=no changes, 2-6, 7 = significantly change in complexity) whether they experienced increased complexity in:

- Increased number of sites
- Increased numbers of employees
- Increased number of activities
- Division of labor
- Increased communication among the different sites
- New decision processes
- Increased number of products
- Managing a culturally dispersed organization

Figure 9 illustrates the average of the answers for the eight questions given in the survey. The figure illustrates that only 11% of the companies experienced no change in the complexity (answer 1), whereas 7% experienced significant increased complexity on average (answer 7).

Figure 9: Increased complexity

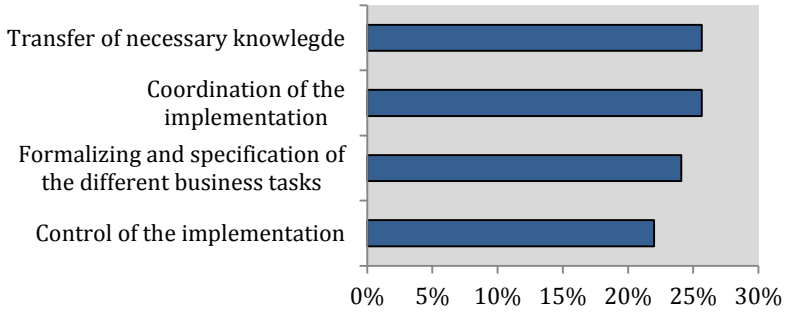


Source: GONe survey

Especially the complexity in increased communication among the different sites and managing across culturally borders are of particularly interest for this thesis. From the survey we found that only 7% of the companies experienced no change in the complexity of the management across cultures and also only 7% of the companies experienced no change in the complexity of the communication between the different production sites. Hence, a significant amount of the companies experienced an increase in the complexity of the communication and managing across cultural borders.

The final finding, which will be highlighted from the survey, is whether the companies experienced any unexpected challenges associated with their offshoring activities.

Figure 10: Unexpected challenges



Source: GONe survey

As illustrated in figure 10, 26% of the offshoring companies experienced unexpected challenges in transferring the necessary knowledge to the host countries, 26% experienced unexpected challenges in the coordination of the implementation, 24% experienced unexpected challenges in the formalization and the implementation of the implementation and finally 22% of the offshoring companies experienced unexpected challenges in controlling the implementation.

Whether the companies experienced any unexpected challenges associated with offshoring may be explained by bounded rationality, as the companies have only limited information available when the decisions to offshore is made and hence are unable to accurately estimate all future outcome. Further, whether the companies experienced any unexpected challenges associated with their offshoring is another potential explanation of why some companies experienced a cost level higher than the expected.

3.2.2. Secondary data

To answer the previously formulated hypotheses other data sources, beside the data from the Global Operation Network survey, will be used.

Hypothesis #1	Cultural differences will be measured using Hofstede's cultural dimensions
Hypothesis #2	Language differences will be measured using Dow and Karanuratna's (2006) language scale
Hypothesis #3	Political differences will be measured using the Political Constraint Index Dataset (POLCON)
Hypothesis #4a	Geographical distance will be measure in air miles (km) from Copenhagen, Denmark
Hypothesis #4b	Time zone differences will be measured as the time zones away from Denmark
Hypothesis #5	Economic development will be measured as the percent vise development in GDP per capita in the respective countries

A more in debt presentation of the different data sources for measuring the psychic distance between countries will be presented in section 3.4.

3.3. Dependent variable – hidden costs of offshoring

The dependent variable in this thesis is *hidden costs*, and is measured using data form the Global Operation Network (GONe) survey.

As previously mentioned, the companies were in the survey asked on a Likert scale from 1-7 whether the companies experienced any difference between the expected costs and the actual costs associated with their offshoring activities (1=actual cost levels are lower than expected; 2-3; 4=actual cost levels meet expectations; 5-6; 7=actual costs levels are higher than expected).

The question in the survey was directly formulated as[1]:

"Has there been a difference between the expected cost level of the implementation [before the relocation] and the actual cost level realized after the relocation?"

Cost estimation failures are therefore measured as the difference between the expected cost level and the actual cost level.

3.4. Independent variables – measuring the psychic distance factors

In this section the operationalization of the different psychic distance factors will be outlined.

3.4.1. Cultural differences

As previously described the cultural differences between countries are among the psychic distance factors the most widely used and described (Dow & Karunaratna, 2006). Several researchers, such as Soares et al. (2006) or Kogut & Singh (1988), have discussed the choice of dimensions most appropriate for conceptualizing these cultural differences.

Geert Hofstede's dimensions of culture have granted wide acceptance as a measure of differences among national cultures (Dow & Karunaratna, 2006; Kogut & Singh, 1988; Larsen et al., 2012; Håkanson & Ambos, 2010), and have been the most widely used cultural framework in psychology, sociology, marketing, and management studies. The model constitutes a simple, practical, and usable shortcut to the integration of culture into research. Based on this, Hofstede's dimensions of cultural differences have been applied when measuring the cultural differences between countries.

The model originally consisted of four dimensions, assigned indexes on each to all nations, and linked the dimensions with demographic, geographic, economic and political aspect of societies. The four original dimensions are: (1) *individualism-collectivism* (IDV), which describes the relationships individuals have in each culture and the degree of interdependence a society maintains among its members, (2) *uncertainty avoidance* (UAI), which describes the extent to which the members of a culture feels threatened by

[1] Note that the question was originally formulated in Danish

ambiguous or unknown situations and have created beliefs and institutions that try to avoid these. This dimension deals with the need for well-defined rules for prescribed behavior, (3) *power distance* (PDI), which reflects the consequences of power inequality and authority relations in society and it describes the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally, (4) *masculinity-femininity* (MAS), which describes what motivates people, wanting to be the best (masculine) or liking what you do (feminine) (Hofstede, 1983). A fifth dimension called "Long- versus Short-term orientation" (LTO) was added in 1991. Long-term orientation stands for the fostering of virtues oriented towards future rewards, whereas short-term orientation stands for the fostering of virtues related to the past and the present such as national pride, respect for tradition, preservation of "face", and fulfilling social obligations. The fifth dimension has also been referred to as the "Pragmatic versus Normative" dimension (Hofstede, 2014).

Although Hofstede's model has been widely used among researchers it has been widely criticized for being outdated. However, Soares et al. (2006) emphasizes that although culture change, such changes are believed to be very slow and hence the model is still a valuable tool when measuring cultural differences. Hofstede's model further reviews critique on the survey-based approach to measuring value preference in general, the internal validity of the dimensions and his framework in particular (Kogut & Singh, 1988). The critique on his cultural frameworks goes on that it tends to induce on marginal preferences rather than values. Other critics questions the applicability of the dimensions to all cultures and hereunder the method of constructing the scales, emphasizing that "one can conjuncture that other types of samples might yield different dimensions and order of nations". Finally scholars have criticized the model for being based on one corporation and for being empirically – rather than theoretically derived (Soares et al, 2006; Kogut & Singh, 1988). However, even though the criticism has a sound basis, Hofstede's study has so many appealing attributes, namely, the size of the sample, the codification of cultural traits along a numerical index, and its emphasis on attitudes in the workplace (Kogut & Singh, 1988), and we therefore argue that this model will be solid to base our calculations on.

Multiple methods should be used to assess cultures, as no single method "is sufficient to comply with all of the methodological and conceptual requirements for the valid identification of a cultural group" (Soares et al, 2006). For this reason we have chosen to test the cultural dimension in two different ways; once where each of the dimensions are tested independently, and second using Kogut & Singh's (1988) composite index.

Independently test of each dimension – Hofstede's dimensions of culture:

When testing independently the absolute value of each dimension for each country is subtracted from Denmark's corresponding value. Algebraically, the calculations will be built as follows:

$$PDI_{ij}(abs) = absolute\ value\ of\ PDI_{ij}$$
$$PDI_{ij} = \left(PDI_i - PDI_j\right),$$

where PDI_i and PDI_j are Hofstede's power distance score for the exporting country (i) and the importing country (j) respectively. The same calculations will be conducted for Hofstede's uncertainty avoidance scores, individuality scores, masculinity/femininity scores and the scores for long-term orientation.

Kogut & Singh's composite index:

In this thesis, we follow the practice of Kogut & Singh's (1988) index and measure cultural distance in terms of overall differences in "cultural values". Summarizing country differences in cultural dimensions defined by Hofstede (1980), the Kogut & Singh index has become the typical operationalization model of cultural distance (Håkanson & Ambos, 2010). Håkanson & Ambros (2010) however emphasizes that several critical reviews have questioned the validity of the index. The main critique is based on the fact that the model only takes Hofstede's original four dimensions of culture into account, and thereby disregarding the later added dimension of "long term orientation". To overcome this critique, we explore the significance of cultural differences using the Kogut & Singh index with the original four dimensions together with the fifth dimension of long-term orientation.

Using Hofstede's values the composite index is formed based on the deviation along each of the five cultural dimensions of each country from Denmark's rating. The cultural distance (CD_{xy}) between country x and y is calculated as the average of the differences of Hofstede's (1980) country scores adjusted by the variances (v_i) of the corresponding dimension. Algebraically, the index is built as follows (Kogut & Singh, 1988):

$$CD_{xy} = \sum \left\{\left(I_{ix} - I_{jy}\right)^2 / V_i\right\}/5,$$

where I_{ix} stands for the index in the ith cultural dimension and country x, V_i is the variance of the index of the ith dimension, the subscript y indicates country y. The variance is one of the measures of dispersion, which is a measure of by how much the values in the data set are likely to differ from the mean of the values. It is the average of the squares of the deviations from the mean. Squaring the deviations ensures that negative and positive deviations do not cancel each other out.

Note: There exist no Hofstede values for both Bolivia and Ukraine. We have therefore chosen to examine Bolivia with the same cultural values as Brazil and Ukraine as Russia.

3.4.2. Language differences

Most researches so far incorporate language differences by adding simple dummy variables to the analysis (Håkanson & Ambos, 2010; Larsen et al., 2012). When using dummy variables the sample is split into two distinct groups and it is thereby assumed that if two countries do not share the same main language spoken, then the languages are different. When applying the methodology one does not acknowledge that some languages are more similar than others (Dow & Karunaratna, 2006). For example a country like Denmark does not share a main language with any other country in the world, though the language is similar to other languages spoken in countries such as Norway and Sweden.

Based on the above, language differences among countries are therefore not measured using dummy variables. The research by Dow & Karunaratna (2006) developed a three-scale model that allows the researchers to incorporate different scales of language differences. This scale was built so that the incidence that one country's major language is spoken in another country (though not as the main language) and the incidence of similarity between languages could be taken into account. The model constitutes of three categories: L1 is a five point scale which quantifies the difference between the dominant languages of any two countries, i and j, L2 is a five point scale based on the incidence of country i's dominant language(s) in country j, and, L3 is a five point scale based on the incidence of country j's dominant language(s) in country i (Dow & Karunaratna, 2006). This thesis only incorporates L1, since Denmark does not share the Danish language with any other country in the world.

L1 measures the distance between the two closest major languages for each pair of countries and are based on the preceding classification system and is coded as follows:

- 5: Different families
- 4: Same family but different branches
- 3: Same branch but different at the 1st sub-branch level
- 2: Same sub-branch at the 1st level but different at the 2nd level
- 1: Same language

The L1 score for each country is subtracted from Denmark's corresponding value. Algebraically, the calculations will be built as follows:

$$L1_{ij}(abs) = absolute\ value\ of L1_{ij}$$
$$L1_{ij} = L1_i - L1_j$$

3.4.3. Political differences

A significant amount of instruments have been established for measuring the differences in political systems among countries. In this thesis we have chosen a very commonly used index, namely the Political Constraint Index Dataset (POLCON) to measure political differences. POLCON has been developed and is maintained by Witold J. Henisz, and is a way to measure political constraints within a country. The index identifies underlying political structures and systems, and measures their ability to support credible policy commitments.

POLCON measures the probability of a change in policy given the structure of a nation's political institutions (the number of veto points) and the preferences of the actors that inhabit them (the partisan alignment of various veto points and the heterogeneity or homogeneity of the preferences within each branch) (Henisz, 2012).

The index uses large number of different fields of research developed to construct a cross-national time-varying measure of the constraints faced by political actors. Cross-national panel data is used to demonstrate that political constraints are associated with reduced variability in policies, higher investment, and higher economic growth. The dataset contains 90 variables (including country identifiers) that measure various features of the legislative, executive and judicial branches of government. The central variables are indices that seek to estimate the degree of political constraints and risks in a country. The index is among others based on datasets such as Polity IV (which measures the degree of democracy and autocracy), the Cross-National Time-Series Data Archive (consist of different country specific data), Worldwide Governance Indicators (cross-country indicators of governance that take into account features such as political risk, effectiveness and quality) and expert coding by the author. It is a widely acknowledged way of measuring the political risks and constraints within a country and is therefore assessed to be an appropriate measure for political differences between countries (Dow & Karunaratna, 2006).

The scale ranks from 0 (most risky – no checks and balances) to 1 (most constrained – extensive checks and balances), where those countries without effective veto points are assigned the lowest score. A mean value for POLCON across the period 2008 to 2012 is employed in the thesis (Dow & Karunaratna, 2006). The POLCON score for each country is subtracted from Denmark's corresponding value. Algebraically, the calculations will be built as follows:

$$POLCON_{ij}(abs) = absolute\ value\ of POLCON_{ij}$$
$$POLCON_{ij} = POLCON_i - POLCON_j$$

3.4.4. Geographic distance and time zone differences

Of the psychic distance factors the geographic distance and the time zone differences between the home and home countries are the easiest factors to measure. Geographical distance will simply be measured as the distance in air miles (in thousands km) between the capital of the home country, which in this case is Copenhagen, Denmark, and to the different capitals of the offshore locations. The calculation for differences in time zones will be conducted in the same way, just in terms of differences in time zones away from Copenhagen, Denmark.

The geographical distance and time zone difference data is calculated from the homepages timeanddate.com and GeoDataSource.com. The geographical distance and time zone difference in each country is subtracted from Denmark's corresponding value. Algebraically, the calculations will be built as follows:

$$Distance\ in\ km_{ij}(abs) = absolute\ value\ of distance\ in\ km_{ij}$$
$$Distance\ in\ km_{ij} = (Copenhagen - Distance\ in\ km_{j})$$

$$Time\ zone\ difference_{ij}(abs) = absolute\ value\ of time\ zone\ difference_{ij}$$
$$Time\ zone\ differences_{ij} = (Copenhagen - Distance\ in\ hours_{j})$$

When including the distance in kilometers in the regression it will be measured as the natural logarithm of the distance in kilometers.

3.4.5. Economic development

As previously described, the objective of this thesis was to examine how economic differences between home and host countries affect the cost estimation failures of offshoring. However, we have chosen to investigate economic development instead as we have not been able to find enough prior research to underpin that economic differences could have a potential effect on the cost estimation failures of offshoring. It was deduced that the uncertainty and unpredictability of the economic development could affect the likelihood of cost estimation failures.

As previously mentioned, when measuring political differences a five year average of POLCON have been chosen to be suitable, based on what Dow & Karanuratna (2006) applies in their research. The same time frame has been chosen when measuring the economic development. The development in economic growth will be measured as the percent vise development in countries GDP per capita between 2008 and 2012, to control for whether an economic development has an effect on the cost estimation failures. Algebraically, the calculations will be built as follows:

$$\text{GDP development (\%)} = \frac{GDP_{2012} - GDP_{2008}}{GDP_{2008}} \cdot 100$$

3.5. Control variables

As highlighted in the theoretical review a number of other factors have been identified to have an influence on the accuracy of the cost estimation i.e. the level of hidden cost. To capture other factors influencing the hidden costs, we incorporate a number of control variables. Control variables not only help the researchers account for spurious relationships, they also measure the impact of any given variable above and beyond the effects of other variables. The control variables that will be included in the regression models are: 1) the effect of previous experience of offshoring, 2) simplicity of the relocated activities 3) increased complexity in offshoring, 4) the size of the company and the size of the implementation and, 5) years after the implementation.

3.5.1. The effect of previous experience of offshoring

The decision-makers make use of their knowledge about different activities, and on how these different activities are integrated and linked together in the organizational system in their decision-making. They make decisions based on the expectations of the outcome and consequences of the strategic implementation – expectations that are based on previous experience and knowledge (Eisenhardt & Martin, 2000). Previous experience will ceteris paribus create more knowledge of the various tasks and processes (Contractor et al., 2010; Dibbern et al., 2007; Larsen, 2012).

Multiple researches have concluded that companies, whom possess previous experience with offshoring can benefit from their previous experience when they are about to offshore again (Dibbern et al., 2007; Larsen et al., 2012). Hence, experience with similar offshore vendors can potentially have a positive effect on the challenges associated with psychic distance. Contractor et al. (2008) argues that building a global network of disaggregated and dispersed activities is a learning process and as firms gain experience in managing and operating their global activities, they might be able to apply more sophisticated techniques and management tools. Thus we argue that firms with previous offshore experience are more likely to have accumulated knowledge about the offshore-specific challenges. Those firms are therefore likely to be relatively better in estimating the costs associated with the offshoring decision and also on the estimation of how psychic distance affect the communication, behavior and decisions made by the management and employees of the offshore company.

The effect of previous experience will be operationalized using data from the GONe survey. In the survey, the respondents were asked on a Likert scale from 1-7 (1=not at all; 2…6; 7=to a great extent), to which extend they had used previous experience in the implementation. Based on the above, we argue that the more experienced a company is with offshoring the lower is the likelihood that unforeseen challenges should arise, and hence previous experience will decrease the likelihood of cost estimation failures.

3.5.2. The characteristic of the relocated activities

As pointed out in the literature review, the characteristic of the relocated activities and the interaction between the offshore company and the offshore vendor influences the likelihood of experiencing hidden costs (Dibbern et al., 2007; Stringfellow et al., 2008; Kumar et al., 2009; Larsen et al., 2012).

Stringfellow et al. (2008) highlights that the interaction intensity will have an impact on the level of invisible costs, where interaction intensity is influenced by: how well-defined the service offering are, process standardization, knowledge requirements and interdependence. Invisible costs are influenced by the interaction intensity of a service. The greater the interaction intensity, the greater is the effect on invisible costs. Kumar et al. (2009) argues that especially interdependence are to have an significant influence on the success of the offshore decision, whereas Dibbern et al. (2007) argues that interaction between client-specific knowledge and the absorptive capacity of the offshore vendor are to have an impact on the client extra costs. Finally, Larsen et al. (2012) argues that hidden costs become more likely as configuration complexity (interdependencies) and task complexity (complexity of the individual offshore implementation) increases. Overall the four papers argues on this subject, that the higher the interdependency and the required client-specific knowledge, the higher are the likelihood of cost estimation failures. Client specific knowledge is among others influenced by how well-defined the service offering are and how standardized the processes are.

Drawing on this, activity characteristic will in this thesis be measured using the average of four GONe survey items in which the respondents were asked to indicate on a 7-point Likert scale (1=not at all; 2…6; 7=to a great extent) how they would generally characterize the activities, which was relocated to a foreign country. Based on the research conducted by Stringfellow et al. (2008) the four items are: 1) simple and routine, 2) independent from the company's other activities, 3) standardized, and 4) clearly comprehensible division of labor. These items produce a single construct with a Cronbach alpha $\alpha = 0.71$. The Cronbach alpha is a measure of internal consistency, which is how closely related a set of items is as a group. Cronbach's alpha is not a statistical test – it is a coefficient of reliability among the included variables. In most social science research situations a Cronbach coefficient of 0.7 or higher is considered "acceptable" (Jensen & Knudsen, 2006). We can therefore conclude that an average of the four items is an acceptable scale for measuring the characteristic of the relocated activities.

Based on the above we argue, that the simpler the relocated activities are, the lower is the likelihood that unforeseen challenges should arise, and hence will decrease the likelihood of cost estimation failures.

3.5.3. *Increased complexity within the offshore organization*

As highlighted in the theoretical foundation managers and decision-makers realize that organizations with globally dispersed activities are more complex and difficult to manage as communication, coordination and control gets more complicated (Dibbern et al., 2007; Kumar et al., 2009; Larsen, 2012; Larsen et al., 2012). According Larsen (2012) cost estimation failures can be explained by the degree of organizational complexity – complexity caused by the relocation and the need for international coordination. Consequently, the increased complexity of the organization will be included as a control variable in the OLS regression.

Complexity will in this thesis be measured using an average of eight GONe survey items in which the respondents were asked to indicate on a 7-point Likert scale (1=complexity unchanged; 2…6; 7=significantly increased complexity) if the complexity had changed after having relocated activities. The eight items are:

- Increased number of sites
- Increased numbers of employees
- Increased number of activities
- Division of labor
- Increased communication among the different sites
- New decision processes
- Increased number of products
- Managing a culturally dispersed organization

In operationalizing the above measure, an average of the eight questions is created. These items produce a single construct with a Cronbach alpha $\alpha = 0.89$, suggesting that the items have a relatively high internal consistency. We can therefore conclude that an average of the eight items is an acceptable scale for measuring the complexity of the organization after having relocated activities across borders.

Based on the above we argue, that the more globally dispersed organizations are the more complex it gets, and hence the higher is the likelihood that unforeseen challenges should arise, which again will increase the likelihood of cost estimation failures.

3.5.4. The size of the company and the size of the implementation

Researchers such as Larsen (2012) and Larsen et al. (2012) includes the size of the organization and the size of the implementation as factors that potentially could have an effect on the level of the cost estimation failures. As we have found size to be a very standard control variable to include in OLS regression models the two variables will also be controlled for in this thesis.

The effect of the companies' size and the size of the implementation will be operationalized using data from the GONe survey. The size of the offshoring firm is measured as the logarithm of the total number of employees that are employed at the company and the size of the offshoring implementation is measured as the logarithm of the number of employees that are employed at the implementation. The 160 respondents, which have been included in the regression model, had an average number of employees of 3,607 and used on an average 46 employees at the implementation.

Note: Three outliers in global employment the values of 275,000, 109,000 and 100,000 has been removed from the dataset, as all of these observations exceeded more than three standard deviations away from the mean. One outlier in the size of the implementation (measured in terms of the number of employees employed at the implementation) with a value of 5,002 has been removed from the dataset, as this value exceeded more than three standard deviations away from the mean.

3.5.5. Years after the implementation

This control variable has been included in the regression models of this thesis to examine whether the number of years after the implementation has occurred, influences the level of hidden costs. This variable is included as it can be more difficult to retrospectively assess discrepancies between expected and realized costs the older a project is (Larsen et al., 2012). Further, as the companies first realizes hidden costs after the offshoring implementation has occurred, we argue that the likelihood of cost estimation failures increases with the longer the time elapsed since the company's last implementation.

The effect of year after the implementation will be operationalized using data from the GONe survey. The years after the implementation are measured as the differences between the year where the GONe survey was distributed and the year of the implementation.

3.6. Variable overview

The table below provides an overview of the variables that will be included in the regression models.

Table 7: Variable overview

Variable	Operationalization	Data Source
Hidden costs	A Likert scale from 1-7 (1=actual cost levels are lower than expected; 2-3; 4=actual cost levels meet expectations; 5-6; 7=actual costs levels are higher than expected)	GONe survey
Cultural differences	The Kogut-Singh index of distance between the home location and the offshore location and an independent test of each dimension.	Hofstede's measures
Language differences	Distance between the two closest major languages for each pair of countries	Dow and Karunaratna (2006)
Political differences	Differences between political systems in home and host countries	Political Constraint Index Dataset
Geographical distance	The distance in air miles (in thousands km) between the capital of the home country and the different capitals of the offshore locations, the natural logarithm is used in the measurement	Geographical data source
Time zone differences	Hours from Copenhagen to the capital of the offshore vendor countries	Geographical data source
Economic development	GDP per capita development in countries between 2009-2012	World Bank
Previous experience	Use of previous experience on a Likert scale from 1-7 (1=not at all; 2…6; 7=to a great extent)	GONe survey
Characteristic of the relocated activities	Characteristics of the last implementation on a Likert scale from 1-7 (1=not at all; 2…6; 7=to a great extent) – simple and routine, independent from the company's other activities, standardized and clearly comprehensible division of labor, average measure of the four characteristics	GONe survey
Increased complexity within the offshore organization	Complexity associated with the offshore decision on a Likert scale from 1-7 (1=no changes, 2-6, 7 = significantly change in complexity) – average of: − Increased number of sites − Increased numbers of employees − Increased number of activities − Division of labor − Increased communication among the different sites − New decision processes − Increased number of products − Managing a culturally dispersed organization	GONe survey
Size of the company	Number of employees, global, the natural logarithm is used in the measurement	GONe survey
Size of the implementation	Number of included employees in the home and host country, total, the natural logarithm is used in the measurement	GONe survey
Years after the implementation	The differences between the year where the GONe survey was distributed and the year of the implementation	GONe survey

Source: Own making

3.7. Data quality

It is essential to assess the quality of the used data to determine the reliability of the data for making decisions. Data are of high quality "if they are fit for their intended uses in operations, decision-making and planning" or represent real-world construct to which the data refer. To obtain a high quality the data also need not to be outdated, so that conclusions based on the data material and information, are valid and not already outdated (Roebuck, 2011),

Despite our best effort to reduce potential noise in the results and the probability of drawing incorrect conclusions, i.e. by removing outliers from the dataset, there are still some factors that potentially affect the validity and the reliability of the results/findings of this thesis. The following will discuss the quality of the data used in the analysis based on its construct validity and reliability (Yin, 2009).

3.7.1. Validity

Validity is concerned with the integrity of the conclusions that are generated from a research, and validity is in many ways the most important criterion of the assessment of a research (Bryman & Bell, 2007). In terms of construct validity, also referred to as measurement validity, it is important that the research is based on data from many different sources (Bryman & Bell, 2007; Yin, 2009). The construct validity is related to reliability, and the assessment of construct validity presupposes that a measure is reliable. As there is not enough public available data regarding the hidden costs of offshoring, the primary research of this thesis is based on already existing data (secondary data), we ourselves not have collected. The previously formulated hypotheses are, as previously mentioned, tested on a dataset based on a survey from the Global Operation Network (GONe). Since we not ourselves have distributed, formulated and designed the questions in the survey, we acknowledge that this can cause some problems in our analysis. One downside factor of using already existing secondary data is the fact that we have not been able to formulate the questions in the survey to fit the purpose of this thesis. If we were to formulate the questions we might have chosen to state them differently or use other Likert scales more appropriate for the purpose of this thesis. Another downside factor to take into consideration is that the survey data is based on the single company's perceptions. How companies have responded to the survey depends on how they have perceived the questions in the survey. We acknowledge that there always exists the possibility that companies perceive questions in surveys differently and not always as how the authors of the survey expects the respondents to answer.

We assess that all of the other secondary data used in this thesis (all other data besides the data from the GONe survey) is of high quality, since the data has been used and acknowledged by other researchers. For the purpose of this thesis, we do not believe that we should be concerned with whether or not the used data should be outdated.

Internal and external validity are other validity factors to consider. *Internal validity* is concerned with the question of whether a conclusion that incorporates a causal relationship between two or more variables holds

water (Bryman & Bell, 2007). For example, if we suggest that cultural differences affect the cost estimation failures of offshoring, can we then be sure that it is the cultural differences that is responsible for the variation in the cost estimation failures and not something else that is producing an apparent causal relationship? In order to ensure a high level of internal validity, we have strived after being as objective and honest as possible about the construction of the variables. According Yin (2009) it is common that the results of researches are biased as researchers try to improve their own predictions regarding specific hypothesis, and then forgets to keep other factors in mind that may have an influence on the dependent variable. *External validity* is concerned with the question of whether the results of a study can be generalized beyond the specific research context. It is in this context that the issue of how people or organizations are selected to participate in research becomes crucial (Bryman & Bell, 2007). Since our research is based only on a limited number of Danish companies, we believe that readers should be careful to generalize the results beyond this thesis. At the same time, the readers should again be aware of the fact that the results are primarily based on a survey, which potentially can lead to wrong conclusions if the survey respondents have perceived the questions differently than intended.

3.7.2. Reliability

Reliability is concerned with the question of whether the results of a study are repeatable (Bryman & Bell, 2007), stated differently it refers to the ability of an external researcher to arrive at the same results by using the same data and research methodology (Yin, 2009). Reliability is particularly an issue related to quantitative researches of whether a measure is stable or not. We believe that if future researches could gain access to the primary data set used in this thesis, the GONe survey, then they would be able to arrive at the same results as this thesis does. All other data used in this thesis, beside the data from the GONe survey, are public available. We have throughout our research been honest regarding how we have used the data, and which specification we have conducted, and based on this we argue that our findings are repeatable. However, it should be emphasized that the replication of the results only can be made if future researches seek to research the exact same research question as this thesis seek to.

3.8. Econometric specifications

The statistical analysis is conducted on the level of 158 offshore implementations. A hierarchical regression analysis with successive linear regression models, adding more independent variables to each model, is used for measuring the effect of psychic distance on cost estimation failures. The models in this thesis can therefore be characterized as multiple regression models, and as we expect a linear relationship between the dependent variable and the independent variables the statistical analysis ordinary least square (OLS) method is chosen as the most suitable.

In statistics, OLS is a method for estimating the unknown parameters in a linear regression model where the method minimizes the sum of squared vertical distances between the observed responses in the dataset and the responses predicted by the linear approximation. Accordingly the full model of this thesis will be expressed as following:

$$\begin{aligned}\text{Hidden costs} = {} & \beta_0 + \beta_1 \text{Cultural differences} + \beta_2 \text{Language differences} + \beta_3 \text{Political differences} \\ & + \beta_4 \text{Geographical distance} + \beta_5 \text{Time zone differences} + \beta_6 \text{Economic development} \\ & + \beta_7 \text{Characteristic} + \beta_8 \text{Complexity} + \beta_9 \text{Size of the company} \\ & + \beta_{10} \text{Size of the implementation} + \beta_{11} \text{Years after the implementation t} + u_t\end{aligned}$$

β_0 is the coefficient of the constant (the intercept), which measures the expected value of hidden costs, when all other variables are equal to zero. $\beta_1 - \beta_{11}$ is the regression coefficients of the independent variables and measures the change in expected value of hidden costs per unit change in one of the independent variables. u_t is the error term and captures all other factors that influence the dependent variable besides the independent variables.

When applying OLS the underlying assumption of the CLRM must not be violated. According Gujarati & Porter (2009) the Gauss-Markov theorem states that complying with the assumptions of the classic linear regression model (CLRM) yields BLUE estimators, i.e. best (efficient in the sense of least variance), linear, and unbiased (the expected value equals the true value) estimators. These estimators are desirable to obtain, as conclusions drawn from the regression results will be of greater accuracy. To check whether the regression models in this thesis comply with the assumptions, and hence yield BLUE estimators, a number of tests or checks will be applied.

The following will explain the assumptions of the CLRM and also examine the checks and tests that will be applied under each of the assumptions. The tests has been conducted for all of the models in this thesis, however the following examination of the assumptions of the CLRM will be based on the full model of this thesis – model 7a. The results are attached in appendix 7.

1. *The relationship described in the regression model is linear in the parameters, though it may or may not be linear in the variables*

This assumption need to be fulfilled since linear-in-parameter regression models are the starting point of the (CLRM). To check whether the relationship described in the regression models in this thesis is linear in the parameters, we simply just examine the model specifications. If none of the variables/parameters are non-linear, i.e. none of the parameters are exponentially expressed; the relationship described in the regression models can be concluded to be linear in the parameters.

According the full model, none of the parameters are non-linear expressed and hence the relationship described in the regression model is linear in the parameters.

2. *The values of the independent variables are independent of the error term, the covariance between independent variables and errors equals zero*

The values of the independent variables need to be independent of the error term simply to simplify the analysis. To check whether this assumption is violated or not, we run the regression in SAS to obtain the error terms, and thereafter we run a correlation between the independent variables and the error terms to examine whether or not they covariate.

We find in SAS that the independent variables do not covariate with the error terms in any of the models. Accordingly, this assumption is not violated.

3. *The expected value of the error term equals zero*

This assumption states that factors excluded from the model are subsumed in the models error terms, and therefore do not systematically affect the mean value of the dependent variable. Stated differently this assumption requires that the average value of the errors is zero – the positive error term values cancel out the negative error term values so that their average or mean effect on the dependent variable is zero. If the expected value of the error terms does not equal zero, then we are not able to estimate an unbiased intercept. To detect whether the expected value of the error terms equals zero we examine the distribution of the error terms. If the error terms are normally distributed around the mean then the expected value of the errors tends to equal zero.

When examining the histogram (appendix 7) of the dependent variable "Hidden costs" distribution of error terms, we find that the error terms are normally distributed around the mean indicating that the expected value of the error term is zero, and hence the assumption is not violated.

4. *Constant variance of the error term, i.e. homoscedasticity*

In the presence of heteroscedasticity (non-constant variance of the error terms) the OLS estimators are still linear and unbiased as well as consistent and asymptotically normally distributed, but they are no longer efficient (i.e. minimum variance), leading to larger confidence interval. Using the t-test and F-test may be misleading, as the larger confidence intervals may lead us to accept a hypothesis we should have rejected.

To avoid the problem of heteroscedasticity we apply robust standard errors (appendix 7).

5. *No serial correlation between the error terms, i.e. autocorrelation*

Autocorrelation is a term that refers to the existence of correlation between members of a series of observations ordered in time or space. In the presence of autocorrelation (correlation between the errors in different time periods) the OLS estimators are still linear unbiased as well as consistent and asymptotically normally distributed, but they are no longer efficient (i.e. minimum variance), leading to larger confidence interval. Using the t-test, F-test and chi square test may be misleading, as the larger confidence intervals may lead us to accept a hypothesis we should have rejected. To check for whether there is no serial correlation between the error terms, i.e. autocorrelation, the Durbin-Watson d statistic will be applied.

In cross-sectional studies, data are often collected on the basis of a random sample of cross-sectional units as firms. In such cases there is no reason to believe that the error term pertaining to one firm should be correlated with an error term of another firm. Accordingly we do not believe that our dataset would suffer from problems of autocorrelation. We will, however, apply the Durbin-Watson d statistic to check if there unexpectedly is autocorrelation in this regression model. The Durbin-Watson (DW) d is a statistic used to test for first order serial correlation in the errors of a time series regression model under the classical linear model assumptions. The d-statistic can lie in the interval between 0 and 4, below 2 indicates negative autocorrelation, above two indicates positive autocorrelation, and equal to 2 indicates no autocorrelation. Using SAS we find a d-statistic of 1.96 for model 7a, which clearly indicates that there is no autocorrelation present in the regression model.

6. *The number of observations must be larger than the number of parameters to be estimated*

Violation of this assumption points to the "degree of freedom" problem. Few degrees of freedom will tend to give high standard deviations for coefficient estimates, thereby reducing the chance of obtaining significant coefficients. To check whether the number of observations is larger than the number of parameters to be estimated we simply examine the regression models SAS output. This assumption is not violated, as there are 158 observations and 12 parameters, including the intercept, in the model.

7. *Variability in the value of each independent variable, i.e. the variance of each independent variable must be greater than zero*

Stated differently, this assumption states that the values of the independent variables in a given sample must not all be the same. Further, there can be no outliers in the values of the independent variables, that is, values that are very large in relation to the rest of the observations. This is required to avoid that such outliers dominate the regression results. We will examine the descriptive statistic together with the histogram and of each dependent variable, to check whether there are any outliers in any of the dependent variables. If there are any observations there are more than three standard deviations away from the mean then we will characterize these observations as outliers, and these observations will be removed from the data.

We find observations in the control variable "Global employment" and "Size of implementation" that are more than three standard deviations away from their respective means, and these outliers is hence characterized as outliers and are therefore removed from the data.

8. *No collinearity between the regressors, i.e. multicollinearity*

Multicollinearity is a term that refers to the existence of correlation among the independent variables in a multiple regression model.

The consequences of multicollinearity are as follows: If there is perfect collinearity among the independent variables then their regression coefficients are undetermined and their standard errors are not defined. Estimation of the regression coefficients will be possible if the collinearity is high but not perfect, however, then their standard errors tend to be large. As a result, the population values of the coefficients cannot be estimated precisely. To test for multicollinearity between the variables the variance-inflating factor (VIF) will be examined. VIF shows how the variance of an estimator is inflated by the presence of multicollinearity. As r approaches 1, the VIF approaches infinity – that is when VIF is equal to 1 there is no multicollinearity. If VIF is above 10, then we can conclude that multicollinearity is a problem for estimating (Wooldridge, 2009). In this thesis the VIF have been calculated using SAS.

We only encounter the problem of multicollinearity in the models where both geographical distance and time zone differences are included simultaneously obtaining VIF values of 10.04 and 15.49 respectively. Consequently the variables are also included separately in two models.

9. *The regression model used in the analysis need to be correctly specified*

If the model is not correctly specified, we encounter the problem of model specification error or model specification bias. Several tests can be applied to detect whether or not a model is over-fitted or under-fitted, and contains specification errors. However, as we in this thesis have chosen to investigate a specific number of independent variables, based on previous theory and research, we have chosen not to use any tests to encounter if the model should be over-fitted or under-fitted. Consequently we do not assess that this is relevant for our thesis.

10. *The error term follows the normal distribution. (Gujarati & Porter, 2009)*
Adding the assumption of normality (on the basis of the central limit theorem for large samples) leads to the classical normal linear regression model (CNLRM).

If the error terms are not normally distributed then the OLS estimators will still be BLUE. The problem that however arises is that we do not know the sampling, or probability, distributions of OLS estimators. Without that we cannot engage in any kind of hypothesis testing regarding the true values of these estimators. A histogram of the error terms can be obtained from the regression output from SAS, and these outputs will be examined to check whether the error terms follow the normal distribution. When examining the residual histogram for model 7a (see appendix 7), we find that the residuals are normally distributed and hence the assumption is not violated.

The assumptions have been tested for all of the models in this thesis, and the only models which violates an assumption is the models in which both geographical distance and time zone differences are included.

Overall tests
To measure the goodness-of-fit (how well the independent variables explains the dependent variable) the R-squared measure will be used. R-square is in a multiple regression model a statistical measure of how close the data are to a fitted regression line. The measure indicates how much of the variation in the dependent variable that can be explained by the independent variables. It should be noted that an important fact about the R-square is that it never decreases and usually increases when another independent variable is added into the regression.

The F statistic is used to test multiple hypotheses about the parameters in a multiple regression model. An F-test will be used in each step for testing the overall significance of the sample regression – finding out whether all of the slope coefficients are simultaneously/jointly equal to zero. The null hypothesis is hence that all of the slopes of the independent variables are zero. For the F-test to be significant, and we thus can reject the null hypotheses, the calculated F statistic from the SAS output should be higher than the critical value of the F-test. The critical value can be obtained knowing the degrees of freedom (number of parameters including the intercept minus one) and the number of observations. A t-test will be used to test the significance of each individual regression coefficients.

4. Empirical Analysis and Results

In this section, the analysis and results of how psychic distance affects cost estimation failures will be conducted. The section is divided into three sub-sections: the first section will present the descriptive statistics, the second section will present the empirical analysis and the findings of the regression analysis and finally the third section will summarize our findings.

4.1. Descriptive statistics

The correlation matrix and the descriptive data (mean values, standard deviation, minimum and maximum values) are reported in table 8. The correlation coefficient is a measure between -1 and 1 of linear dependence between two random variables. To detect potential problems of multicollinearity, the correlation coefficients among the independent variables have been investigated. As seen from table 8, some of the independent variables are highly correlated indicating potential problems of multicollinearity. The two variables that correlate the most is geographical distance and time zone difference (r=0.94). A correlation coefficient numerically close to one indicates that geographical distance and time zone are highly correlated this is however not surprising as time zone differences in most cases increases with geographical distance. Further the independent dimensions of Hofstede are also highly correlated with a number of the independent variables. As the correlation coefficients among some of the independent variables are high, we have in each model chosen to check for multicollinearity using the variance-inflating factor (VIF). When running the models, and testing for multicollinearity the problem of multicollinearity exist only in the models where both geographical distance and time zone differences are included. The VIF values in neither of the other models exceed 3.9, which is far below the usual threshold of 10 for detecting potential multicollinearity problems (Wooldridge, 2009). Due to the problem of multicollinearity when including both geographical distance and time zone differences the variables are included separately.

When looking more closely at the variable for cost estimation failures "Hidden costs", 11.8% of the respondents reported that the actual costs were lower than the expected costs, 62.9% of the respondents reported that the actual costs met expected costs, and 25.3% of the respondents reported that the actual costs were higher than expected costs. However, only 158 of the 186 observations are used in the regression analysis to capture the variation in the relative degree of cost estimation failures i.e. variation in hidden costs, as only 158 completed all of the questions, relevant for this thesis. The mean value of our dependent variable – "Hidden costs" – is 4.13, indicating that on average the observed firms have slightly underestimated the cost associated with offshoring. The standard deviation of 0.89 implies that the firms observed in the survey vary in their accuracy of estimating the cost of offshoring. As approximately 25% of the surveyed organizations have experienced hidden costs, it can be concluded that cost estimation failures are a problem that affects many offshore organizations.

Table 8: Correlation matrix and descriptive statistics

	Variables (N=158)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	Hidden Cost	1.00																	
2	Cultural differences	-0.15*	1.00																
3	abs pdi	-0.05	0.82***	1.00															
4	abs idv	0.08	0.52***	0.66***	1.00														
5	abs mas	-0.12†	0.59***	0.37***	0.13***	1.00													
6	abs uai	-0.10	0.16*	0.00	-0.40*	-0.06**	1.00												
7	abs lto	-0.15	0.43***	0.08	0.15***	0.18†	-0.28***	1.00											
8	Geographical distance	0.12	0.24***	0.51***	0.82***	0.13*	-0.51***	-0.04*	1.00										
9	Time zone differences	0.10	0.27***	0.44***	0.84***	0.17***	-0.63	0.16***	0.94***	1.00									
10	Language differences	-0.12	0.63***	0.55***	0.69***	0.25***	-0.01***	0.27***	0.45***	0.50***	1.00								
11	Political differences	0.06	0.32***	0.45***	0.70***	0.24***	-0.65***	0.31***	0.70***	0.77***	0.43***	1.00							
12	GDP development	0.09	0.33***	0.44***	0.76***	-0.04	-0.56	0.31	0.65***	0.76***	0.47***	0.74***	1.00						
13	Previous experience	-0.08	0.09	0.17*	0.21**	-0.00	-0.06	-0.01	0.24***	0.24***	0.15*	0.12†	0.20**	1.00					
14	Characteristic	-0.19**	0.01	0.01	-0.04	0.12	0.01*	0.02	-0.01	-0.03	-0.02	0.06	-0.10	0.06	1.00				
15	Complex	0.14†	0.13	0.17*	0.27***	-0.02	-0.18	0.06	0.24***	0.25***	0.20**	0.15*	0.24***	0.40***	-0.13†	1.00			
16	Size of the company	0.08	-0.06	-0.03	-0.06	0.12	-0.03	-0.00†	0.01†	-0.01	-0.12†	0.02	-0.11	0.22**	0.04	-0.02	1.00		
17	Size of the impl.	0.07	-0.03***	-0.03***	0.05**	0.03	-0.11	-0.00†	0.07†	0.08†	-0.04	0.11	0.11	0.19**	-0.12†	0.20**	0.31***	1.00	
18	Years after the impl.	0.00	-0.06*	-0.10	-0.08	-0.09	-0.01†	0.12	-0.12	-0.09	-0.06	0.01	-0.01	-0.06	0.10	0.03	-0.08	0.16*	1.00
	Mean	4.13	3.69	47.57	28.07	37.95	36.93	26.40	8.70	2.92	3.88	0.21	0.27	4.99	4.11	4.36	7.24	4.01	3.57
	Std Dev	0.89	1.66	19.55	19.37	17.40	23.59	19.16	1.20	2.93	0.89	0.18	0.21	1.85	1.14	1.23	1.86	1.28	4.00
	Minimum	1.00	0.31	12.00	1.00	2.00	6.00	0.00	6.87	0.00	2.00	0.02	-0.10	1.00	1.00	1.00	4.40	1.00	1.00
	Maximum	7.00	7.39	82.00	60.00	84.00	72.00	53.00	10.31	8.00	5.00	0.54	0.63	7.00	7.00	6.75	12.08	7.36	25.00

† , * , ** , and *** indicate significance levels of 10%, 5%, 1%, and 0.1%, respectively.

Source: Own making

4.2. Hypotheses testing

This sub-section will present the results and findings of the OLS regression models and hence present how the chosen psychic distance factors affect the cost estimation failures of the decision to offshore. The first model that will be presented is the model containing all of the control variables. Hereafter the hypothesis will be tested individually, and finally three versions of the full models containing all of the psychic distance factors and the control variables will be presented. Lastly an extension of the full model will be conducted, to examine whether the influence of the psychic distance changes when analyzing hidden costs for the subsamples production and service & administration and R&D separately.

4.2.1. Control variables

Table 9 beneath shows the OLS statistics for model 1. Model 1 is a hierarchical regression model with hidden costs as the dependent variable and includes all of the control variables as independent variables. The control variables are, as previously mentioned, included in the regression models to capture other factors influencing the level of hidden costs.

Table 9: Hierarchical regression model 1: Control variables

	Hidden Costs	
Variables	Model 1	
Previous experience	-0.11*	(0.05)
Characteristic	-0.10	(0.07)
Complex	0.17**	(0.06)
Size of the company	0.10*	(0.04)
Size of the impl.	-0.01	(0.05)
Years after the impl.	-0.00	(0.02)
Intercept	3.66***	(0.51)
N	158	
F-value	2.88**	
R-Square	0.103	

† , * , ** , and *** indicate significance levels of 10%, 5%, 1%, and 0.1%, respectively.
Robust standard errors are reported in parentheses

The model in itself is highly significant with an F-value of 2.88. A critical value of 2.14 is obtained with six degrees of freedom and 158 observations, hence the critical value is lower than the calculated F value of 2.88, and we can thus reject the null hypothesis. We further obtain an R-square of 0.103, which indicates that 10.3% of the variation in the dependent variable "Hidden costs" is explained by the control variables in model 1.

Two of the five control variables are significant at a 5% level and one is significant at a 1% level. Model 1 shows that previous experience decreases the likelihood of cost estimation failures – have a positive impact on hidden costs (β=-0.11, $p<0.05$). This finding is consistent with previous research, which suggests that companies that have previous experience with offshoring can benefit from their knowledge gained when they

are about to offshore again to similar offshore vendors (Dibbern et al., 2007; Contractor et al., 2010; Larsen, 2012). Thus, previous experience allows companies to make more exact estimates of the expected costs, and thereby reduce the likelihood of cost estimation failures. The control variable "Complex" is positive and significant (β=0.17, $p<0.01$). This implies that as organizations offshore, the more complex the organizations get, and consequently the likelihood of cost estimation failures increases. This finding is consistent with previous research, which states that managers experience that organization gets more complex and complicated to manage after the relocation (Dibbern et al., 2007; Kumar et al., 2009; Larsen, 2012). The variable "Size of the company" is positive and significant (β=0.10, $p<0.05$). This implies that the larger the organization gets (the larger the number of global employees a company has) the higher is the likelihood of cost estimations failures. These findings are found to be consistent throughout the models presented in section 4.2.2. to 4.2.7.

The remaining variables are not significant and consequently we are not able to conclude which effect they have on cost estimation failures.

4.2.2. Hypothesis #1 - Cultural differences

The OLS model including Kogut & Singh's composite index of Hofstede's cultural dimensions and all of the control variables are presented in table 10 column one (model 2a) – variable "Cultural differences".

Table 10: Hierarchical regression model 2a and 2b: Hypothesis 1

	Hidden Costs			
Variables	Model 2a		Model 2b	
Cultural differences	-0.06	(0.04)		
abs pdi			-0.00	(0.01)
abs idv			0.01	(0.01)
abs mas			-0.00	(0.00)
abs uai			-0.00	(0.00)
abs lto			-0.01*	(0.00)
Previous experience	-0.10*	(0.04)	-0.11*	(0.05)
Characteristic	-0.10	(0.07)	-0.10	(0.07)
Complex	0.18***	(0.06)	0.15**	(0.06)
Size of the company	0.09*	(0.04)	0.11*	(0.04)
Size of the impl.	-0.01	(0.05)	-0.01	(0.05)
Years after the impl.	-0.00	(0.02)	0.01	(0.02)
Intercept	3.90***	(0.51)	4.17***	(0.52)
N	158		158	
F-value	2.79**		2.47*	
R-Square	0.115		0.157	

† , * , ** , and *** indicate significance levels of 10%, 5%, 1%, and 0.1%, respectively.
Robust standard errors are reported in parentheses

The model in itself is highly significant with an F-value of 2.79. The model has an R square of 0.115 which indicates that 11.5% of the variation in the dependent variable "Hidden costs" is explained by Kogut & Singh's composite index of Hofstede's cultural dimensions and the included control variables. As seen from table 10, column one, model 2a shows that Kogut & Singh's composite index of Hofstede's cultural dimensions has failed to reach statistical significance, and we can thus not conclude the effect of cultural differences on cost estimation failure.

A second regression model substituting Kogut & Singh's composite index in place of the five underlying dimensions of Hofstede has been conducted. This has been performed as to investigate the effect of cultural differences more detailed. The OLS model including the individual measures of Hofstede's cultural dimensions and all of the control variables are presented in table 10 column two (model 2b). The model in itself is significant with an F-value of 2.47 and provides an R square of 0.157, which implies that the model explains 15.7% of the variation of the dependent variable. Not surprisingly, in light of the above result, only one of the five Hofstede's dimensions is significant *Long- versus Short-term orientation* (LTO) (β=-0.01, $p<0.05$).

As none of the five dimensions have a significant influence on the cost estimation failures, and only one of the variables seems to be significant, only Kogut & Singh's composite index of Hofstede's cultural dimensions will be tested in the full model (table 13).

4.2.3. Hypothesis #2 – Language differences

Table 11 illustrates hypothesis #2 (language differences), hypothesis #3 (political difference) and hypothesis #5 (economic development).

The OLS model including language differences and all of the control variables are presented in table 11 column one (model 3). The model in itself is significant with an F-value of 2.80. The model has an R-square of 0.116 indicating that 11.6% of the variation in the dependent variable, "Hidden costs", is explained by the linguistic differences and the included control variables. As seen from table 11, model 4, language differences decrease the likelihood of cost estimation failures (β=-0.12, $p<0.10$). This finding does not support hypothesis 3, which states that differences in language between home and host countries are to increase the likelihood of cost estimation failures. However the parameter estimate is only partly significant at a 10% level, and hence we can only conclude that language differences may decrease the likelihood of cost estimation failures with 90% certainty.

Table 11: Hierarchical regression model 3, model 4 and model 5: Hypothesis 2, 3 and 5

Variables	Hidden Costs					
	Model 3		Model 4		Model 5	
Language differences	-0.12†	(0.08)				
Political differences			0.24	(0.41)		
Economic development					0.37	(0.32)
Previous experience	-0.10*	(0.04)	-0.11*	(0.05)	-0.12**	(0.04)
Characteristic	-0.09	(0.07)	-0.10	(0.07)	-0.09	(0.07)
Complex	0.19***	(0.06)	0.17**	(0.06)	0.17**	(0.06)
Size of the company	0.09*	(0.04)	0.10*	(0.04)	0.10*	(0.04)
Size of the impl.	-0.02	(0.05)	-0.01	(0.05)	-0.01	(0.05)
Years after the impl.	-0.00	(0.02)	-0.00	(0.02)	0.00	(0.02)
Intercept	4.10***	(0.53)	3.66***	(0.51)	3.66***	(0.51)
N	158		158		158	
F-value	2.80**		2.51*		2.63*	
R-square	0.116		0.105		0.109	

† , * , ** , and *** indicate significance levels of 10%, 5%, 1%, and 0.1%, respectively.
Robust standard errors are reported in parentheses

4.2.4. Hypothesis #3 – Political differences

The OLS model concerning political differences (POLCON) and all of the control variables are presented in table 11 column two (model 4). The model in itself is significant with an F-value of 2.51. The model has an R-square of 0.105 indicating that 10.5% of the variation in the dependent variable, "Hidden costs", is explained by political differences and the included control variables. As seen from model 4, political differences are highly insignificant and we can hence not conclude which effect political differences have on cost estimation failures.

4.2.5. Hypothesis #4 – Geographic distance and time zone differences

As previously mentioned the problem of multicollinearity arises when including both geographical distance and time zone differences in one model. The most obvious solution to the problem of multicollinearity will be to leave out one of the variables from the model. This will clearly solve the problem however leaving out one variable will create new problems. For instance, dropping a variable may cause model specification error (omitted variable). Consequently the two variables are included both separately (model 6b and model 6c) and jointly (model 6a), to see which model that have the highest explaining power.

The OLS model including both geographical distance and time zone differences and all of the control variables are presented in table 12 column one (model 6a). The model in itself is significant with an F-value of 2.60. The model has an R-square of 0.121 indicating that 12.1% of the variation in the dependent variable, "Hidden costs", is explained by the geographical distance, the time zone differences and the included control variables. As seen from model 3a, the parameters estimates for geographical distance and time zone differences are statistically insignificant, which could be a consequence of multicollinearity.

Table 12: Hierarchical regression model, model 6a-6c: Hypothesis 4a and 4b

	Hidden Costs					
Variables	Model 6a		Model 6b		Model 6c	
Geographical distance	0.20	(0.17)	0.10†	(0.06)		
Time zone	-0.04	(0.07)			0.03	(0.02)
Previous experience	-0.12**	(0.05)	-0.12**	(0.05)	-0.12**	(0.05)
Characteristic	-0.10	(0.07)	-0.10	(0.07)	-0.10	(0.07)
Complex	0.16*	(0.06)	0.16**	(0.06)	0.16**	(0.06)
Size of the company	0.10*	(0.04)	0.10*	(0.04)	0.10*	(0.04)
Size of the impl.	-0.01	(0.05)	-0.01	(0.05)	-0.01	(0.05)
Years after the impl.	0.00	(0.02)	0.00	(0.02)	0.00	(0.02)
Intercept	2.14	(1.39)	2.90	(0.68)	3.64	(0.51)
N	158		158		158	
F-value	2.60**		2.88**		2.72*	
R-Square	0.121		0.118		0.113	

† , * , ** , and *** indicate significance levels of 10%, 5%, 1%, and 0.1%, respectively.
Robust standard errors are reported in parentheses

The OLS model including geographical distance and all of the control variables are presented in table 12 column two (model 6b). The model in itself is highly significant with an F-value of 2.88. The model has an R-square of 0.118 indicating that 11.8% of the variation in the dependent variable, "Hidden costs", is explained by the geographical distance and the included control variables. As seen from model 6b, the variable for geographical distance is positive and partly significant (β=0.10, $p<0.10$), providing support for Hypothesis 4a stating that geographical distance increases the likelihood of cost estimation failures.

The OLS model including time zone differences and all of the control variables are presented in table 12 column three (model 6c). The model in itself is significant with an F-value of 2.72. The model has an R-square of 0.113 indicating that 11.3% of the variation in the dependent variable, "Hidden costs", is explained by the time zone differences and the included control variables. As seen from model 6c, the variable for time zone difference is insignificant and hence we are not able to conclude which effect time zone differences have on cost estimation failures.

Looking at R-square for the three models it can be concluded that model 6a has the highest explaining power (R^2=0.121). However as the model suffers from multicollinearity R-square tends to be higher and consequently not an indicator of the true explaining power. As R-square for model 2b (R^2=0.118) is higher than R-square for model 2c (R^2=0.113), and only slightly smaller than R-square for model 3a, it can be concluded that geographical distance between countries has a higher explaining power than time zone differences between countries.

4.2.6. Hypothesis #5 – Economic development

The OLS model concerning economic development (GDP development) and all of the control variables are presented in table 11 column three (model 5). The model in itself is significant with an F-value of 2.63. The model has an R-square of 0.109 indicating that 10.9% of the variation in the dependent variable, "Hidden costs", is explained by economic development and the included control variables. As seen from model 5, economic development is not significant and hence we are not able to conclude which effect economic development has on cost estimation failures.

4.2.7. The full model

The regression models in table 13 represent the three versions of the full model with all of the psychic distance variables included at once.

As previously mentioned the problem of multicollinearity arises when including both geographical distance and time zone differences in one model. As a consequence of multicollinearity geographical distance and time zone differences is included both jointly in the model including all psychic distance factors (model 7a) and separately (model 7b and 7c). Model 7a consists of all psychic distance factors and the control variables, whereas model 7b excludes time zone differences and model 7c excludes geographical distance.

Table 13: Hierarchical regression model 7a-7c: The full model

		Hidden Cost					
Variable		Model 7a		Model 7b		Model 7c	
Cultural differences	H1	-0.03	(0.05)	-0.03	(0.05)	-0.03	(0.05)
Language differences	H2	-0.18†	(0.10)	-0.18†	(0.10)	-0.18†	(0.10)
Political differences	H3	-0.39	(0.68)	-0.46	(0.73)	-0.39	(0.68)
Geographical distance	H4a	0.23	(0.18)	0.17*	(0.09)		
Time zone differences	H4b	-0.04	(0.09)			0.06	(0.04)
Economic development	H5	0.54	(0.65)	0.43	(0.50)	0.31	(0.57)
Previous experience		-0.12**	(0.05)	-0.12**	(0.05)	-0.12**	(0.05)
Characteristic		-0.09	(0.07)	-0.08	(0.07)	-0.08	(0.07)
Complex		0.17**	(0.06)	0.17**	(0.06)	0.17**	(0.06)
Size of the company		0.10*	(0.04)	0.10*	(0.04)	0.10*	(0.04)
Size of the impl.		-0.03	(0.05)	-0.03	(0.05)	-0.03	(0.05)
Years after the impl.		0.00	(0.02)	0.00	(0.02)	-0.00	(0.02)
Intercept		2.55†	(1.51)	3.06***	(0.87)	4.33***	(0.51)
N		158		158		158	
F-value		1.93*		2.49**		2.33**	
R-square		0.159		0.157		0.149	

† , * , ** , and *** indicate significance levels of 10%, 5%, 1%, and 0.1%, respectively.
Robust standard errors are reported in parentheses

The OLS model concerning all of the psychic distance factors and all of the control variables are presented in table 13 column one (model 7a). The model in itself is significant with an F-value of 1.93. The model has an R-square of 0.159 indicating that 15.9% of the variation in the dependent variable, "Hidden costs", is

explained by all of the psychic distance variables and the control variables. The findings in model 7a are consistent with the findings of the previous models, illustrating the psychic distance factors separately.

The OLS model concerning all of the psychic distance factors, except time zone differences, and all of the control variables are presented in table 13 column two (model 7b). The model in itself is significant with an F-value of 2.49. The model has an R-square of 0.157 indicating that 15.7% of the variation in the dependent variable, "Hidden costs", is explained by all of the psychic distance variables (except time zone differences) and the control variables.

The OLS model concerning all of the psychic distance factors, except geographical distance, and all of the control variables are presented in table 13 column three (model 7c). The model in itself is significant with an F-value of 2.33. The model has an R-square of 0.149 indicating that 14.9% of the variation in the dependent variable, "Hidden costs", is explained by all of the psychic distance variables (except geographical distance in kilometers) and the control variables.

Comparing the three models (7a, 7b and 7c) in table 13 with model 1 in table 9, which only includes the dependent variable and the control variables, it can be seen that all of the models explains more of the variation in the dependent variable "Hidden costs", as all of the models obtains higher R-square values. This suggests that the psychic distance factors to some extent helps to explain why companies experience hidden costs of offshoring. It can further be seen that model 7a and 7b explains the most and almost the same variation of the dependent variable "Hidden costs", when comparing the three models in terms of their R-square values. Model 7a explains 15.3% of the variation in the dependent variable, "Hidden costs", model 7b explains 15.2% of the variation in the dependent variable and model 7c explains 14.4% of the variation in the dependent variable. However, there exist some problems associated with R-square that should be taken into account, when comparing R-squares among different OLS models. An important property of R-square is that it is a non-decreasing function of the number of independent variables – as the number of independent variables increases, R-square almost invariably increases and never decreases (Gujarati & Porter, 2009). Further R-square also tends to be higher when a model suffers from multicollinearity and is consequently not an efficient indicator of the true explaining power (Gujarati & Porter, 2009). Model 7a both have one more explanatory variable compared to model 7b and also suffer from multicollinearity as the model contains both geographical distance between countries and time zone differences. As R-square for model 7a (R^2=0.153) is only slightly higher than the R-square for model 7b (R^2=0.152), it can be concluded that model 7b most likely explains most of the variation in the dependent variable "Hidden costs".

In all three models (7a, 7b and 7c), the parameter estimate for language differences is found to be negative and partly significant (β=-0.12, $p<0.10$). Consequently, hypothesis 2 is not supported by the findings of this

thesis. The parameter estimate for geographical distance is found to be positive and significant (β=0.17, p<0.05), providing support for hypothesis 4a.

4.2.8. Extension of the full model

As we included the type of activity that had been relocated by the organization as a control variable, the model was in itself found to be highly insignificant. Consequently, we extended the full models by adding two new versions of the full model to capture the two subsamples of production and service & administration and R&D separately. Service & administration and R&D was included in one sample as the number of observation for R&D was below 30, which is characterized as being a small sample size (Gujarati & Porter, 2009). The extension of the full model is presented in table 14. Regression model 8a, 8b and 8c illustrates the result of organizations that have relocated production activities to foreign countries, and regression model 9a, 9b and 9c illustrates the result of organizations that have relocated either service and administration activities or R&D activities to foreign countries.

Interesting for both samples of the extended model is that the R-square values increases significantly in both cases, reaching 0.336 in the case of service & administration and R&D. It is also clear that the variables have different effect in the two samples as only political differences reach significance in both samples. However, the parameter estimate is negative in the case of production, whereas it is found to be positive in the case of service & administration and R&D.

Production

As seen from table 14 the three regression models for production are found to be partly significant, as the F-value do not exceeds 1.64. The R-squares are found to lie in the interval between 0.169 and 0.215.

Language differences are in model 8a (β=-0.25, p<0.1) and 8b (β=-0.26, p<0.1) found to be negative and partly significant. Political differences are in model 8a (β=-1.59, p<0.1) and 8c (β=-1.82, p<0.1) found to be negative and partly significant at a 10%, whereas the parameter estimate in model 8b (β=-1.97, p<0.05) is found to be negative and significant at a 5% level. Hence, language differences and political differences are found to decrease the likelihood of cost estimation failures when relocating production activities and consequently do not provide support for hypothesis 2 and hypothesis 3. Geographical distance is in model 8a (β=0.60, p<0.05) and 8b (β=24, p<0.05) found to be positive and significant at a 5% level indicating that geographical distance between countries increases the likelihood of cost estimation failures, especially when relocating production activities to foreign countries. Consequently, the findings of geographical distance do in model 8a and 8b provide support for hypothesis 4a. Economic development is in model 8a (β=1.91, p<0.05) found to be positive and significant. This indicates that the economic development in the host country will increase the likelihood of cost estimation failures when relocating production activities. Hence, the finding of economic development provides support for hypothesis 5.

Notably, the control variable “Years after the implementation" is in all three models (model 8a, model 8b and model 8c) found to be positive and significant (β=0.06, $p<0.05$) indicating that the longer the time after the implementation has completed the greater is the likelihood of experiencing hidden costs.

Service & Administration and R&D

As seen from table 14 the three regression models for service & administration and R&D are highly significant at a 1% level and all of the three models provide R-square values higher than 0.326.

Political differences are in model 9a (β=1.27, $p<0.1$) and 9b (β=1.48, $p<0.1$) found to be positive and partly significant at a 10% indicating that political differences among countries are to increase the likelihood of cost estimation failures when relocating service & administration and R&D activities to foreign countries. Consequently, the findings of political differences in model 9a and 9b provide support for hypothesis 3.

In all of the three models the control variable “Characteristic” is found to be negative and significant on a 1% level, whereas the variables “Complex” and “Size of the company “ are positive and significant on 5% level. The control variable “Size of the implementation” is found in two out of the three models to be negative and partly significant at a 10% level.

Table 14: Hierarchical regression model 7a-7c: Extension of the full model

		Hidden Costs											
		Production						Service & Adm. and R&D					
Variables		Model 8a		Model 8b		Model 8c		Model 9a		Model 9b		Model 9c	
Cultural differences	H1	0.01	(0.06)	0.02	(0.06)	0.01	(0.06)	-0.07	(0.08)	-0.08	(0.09)	-0.08	(0.08)
Language differences	H2	-0.25†	(0.16)	-0.26†	(0.16)	-0.21	(0.16)	-0.15	(0.14)	-0.13	(0.14)	-0.14	(0.14)
Political differences	H3	-1.59†	(0.98)	-1.97*	(1.07)	-1.82†	(1.12)	1.27†	(0.80)	1.48†	(0.84)	1.16	(0.77)
Geographical distance	H4a	0.60*	(0.30)	0.24*	(0.12)			-0.21	(0.26)	-0.01	(0.15)		
Time zone differences	H4b	-0.21	(0.15)			0.07	(0.06)	0.11	(0.13)			0.03	(0.07)
Economic development	H5	1.91*	(0.96)	1.09	(0.81)	0.93	(0.94)	-0.58	(0.81)	-0.39	(0.76)	-0.51	(0.81)
Previous experience		-0.10	(0.08)	-0.11	(0.08)	-0.11	(0.08)	-0.05	(0.06)	-0.06	(0.06)	-0.06	(0.06)
Characteristic		0.02	(0.10)	0.02	(0.11)	0.03	(0.11)	-0.25**	(0.08)	-0.26**	(0.08)	-0.25**	(0.08)
Complex		0.12	(0.09)	0.12	(0.09)	0.13	(0.09)	0.19*	(0.09)	0.19*	(0.09)	0.19*	(0.09)
Size of the company		0.07	(0.06)	0.04	(0.06)	0.03	(0.07)	0.13*	(0.06)	0.12*	(0.05)	0.12*	(0.06)
Size of the impl.		0.07	(0.07)	0.07	(0.07)	0.08	(0.07)	-0.14†	(0.09)	-0.14†	(0.09)	-0.13	(0.09)
Years after the impl.		0.06*	(0.03)	0.06*	(0.03)	0.06*	(0.03)	-0.02	(0.02)	-0.02	(0.02)	-0.02	(0.02)
Intercept		-0.69	(2.70)	2.34†	(1.35)	4.05***	(0.98)	6.54***	(2.01)	5.05***	(1.25)	5.02***	(0.55)
N		85		85		85		73		73		73	
F-value		1.64†		1.60†		1.36†		2.53**		2.68**		2.71**	
R-square		0.215		0.195		0.169		0.336		0.326		0.329	

† , * , ** , and *** indicate significance levels of 10%, 5%, 1%, and 0.1%, respectively.
Robust standard errors are reported in parentheses

4.3. Concluding remarks

This sub-section will briefly present the findings and serve as a concluding paragraph, however also highlight findings for further discussion.

The results concerning cultural differences (hypothesis 1) failed to reach statistical significance at any level despite the fact that Hofstede's composite index has been the most widely used measure of psychic distance between countries. Further the coefficients were across all models in the opposite direction of what was suggested in our hypothesis. Consequently, we are not able to conclude which effect cultural differences have on cost estimation failures.

The results concerning language differences (hypothesis 2) were found to be negative, indicating that language differences among countries decreases the likelihood of cost estimation failures. Consequently, the hypothesis of language differences was not supported in any of the models. The finding was however only partly significant.

The results concerning political differences (hypothesis 3) were in the different models found to have different impact on cost estimation failures. In the models for production activities (8a, 8b and 8c) political differences were found to decrease the likelihood of cost estimation failures, whereas we found in the models for service & administration and R&D activities (9a and 9b) that political differences are to increase the likelihood of cost estimation failures. This implies that the hypothesis concerning political differences is supported when only looking at firms that offshore service & administration and R&D activities. However the results failed to reach statistical significance in the rest of the models.

The results concerning geographical distance (hypothesis 4a) were found to increase the likelihood of cost estimation failures, especially for organizations that relocates production activities. The measure of time zone difference (hypothesis 4b) however failed to reach statistical significance in any of the models, and we are therefore not able to conclude which effect time zone differences have on cost estimation failures.

The results concerning economic development (hypothesis 5) was found to increase the likelihood of cost estimation failures for organizations that have relocated production activities. However, as previously mentioned, the model where both geographical distance and time zone differences are included suffers from multicollinearity and therefore we are not able to make solid conclusions regarding the result in this model. Further economic development failed to reach statistical significance in the rest of the models.

The above-mentioned results and findings will in the following section be discussed and the theoretical foundation will be revisited.

5. Discussion

In this section, the findings of the prior analysis and results will be discussed in light of the theoretical foundation presented in section 2. More specifically the section seeks to answer the hypotheses by discussing the results of the analysis and the proposed theory. This section is divided into two sub-sections, the first section will discuss the findings of this thesis and the second section will discuss the implication for future research.

5.1. Discussion of the findings

Cost estimation is an important element of the strategic decision-making and consequently an important element of the strategic decision to offshore. However, as previously described, organizations and their managers often find that the actual cost levels surpass the estimated cost levels, as decision-makers are unable to foresee all the operational challenges and costs associated with offshoring. Consequently, firms often realize that the strategic decision to offshore can be associated with hidden costs – costs that are not accounted for in the strategic decision-making – which in some cases outweigh the forecasted savings and benefits.

In this thesis, it has been theoretically deduced that hidden costs occur in situations where the psychic distance among the included countries is high. In those situations decision-makers are more likely to be subject to bounded rationality as it is difficult for them to predict the actual challenges when offshoring to a psychic distant country. In situations where managers and decision-makers are faced with psychic distance, it has been argued that they are more likely to unintentionally neglect and overlook the implications and operational challenges of offshoring due to bounded rationality. That the decision-makers are not able to foresee all the costs due to bounded rationality and uncertainty of future events is highlighted in this thesis with two short real life examples. The two companies Dell Inc. and KMD A/S did not take into account how cultural and language differences would influence the day-to-day activities. As a result they faced significant challenges, which consequently led to the decision to back-source the activities to their respective home countries, as the managers and the strategic decision-makers failed to effectively estimate the actual costs of the strategic decision to offshore. Hence, cost estimation failures are the consequence of the underlying hidden costs, which argued in this thesis exist due to unforeseen challenges and new complexities caused by psychic distance between home and host countries.

As mentioned in the introduction the main contribution of this thesis falls broadly into two areas. First, this thesis were to uncover the drivers for cost estimation failures in the strategic decision-making, adding to the existing literature by showing how psychic distance affects the decision-makers' ability to correctly estimate the actual costs of offshoring. Second, this thesis was also to investigate whether or not it is critical for organizations and managers to incorporate psychic distance into the strategic decision-making and cost estimation of their offshore decision.

In this thesis we have developed a model of hidden costs, based on 158 offshore implementations from the GONe survey, which suggests that the psychic distance between countries could be a factor explaining the cost estimation failures of offshoring.

In brief, the results from the presented analysis suggest that language differences are to *decrease* the likelihood of cost estimation failures, whereas geographical distance and economic development are to *increase* the likelihood of cost estimation failures. It should however be noted that the result for economic development was found only to be statistically significant for organizations that have relocated production activities. Finally political differences were found to *decrease* the likelihood of cost estimation failures when relocating production activities, whereas the same variable was found to *increase* the likelihood of cost estimation failures when relocating service & administration and R&D activities. The measures for cultural differences and time zone differences failed to reach statistical significance in any of the models, and as a consequence we are not able to conclude which effect cultural differences and time zone differences have on cost estimation failures. Accordingly, this thesis fails to find statistical significance for some of the psychic distance factors and further the findings of this thesis suggests that not all psychic distance factors have an impact on the level of cost estimation failures. However, the research also to some extent indicates that the type of activity (production vs. service & administration and R&D) determines the effect of psychic distance on cost estimation failures – a finding that correspond to the research conducted by Ghemawat (2001). It appears that some of the psychic distance factors are more important to assess if the organization relocate production activities compared to service & administration and R&D. This finding implies that organizations and decision-makers need to assess and incorporate the phenomena of psychic distance differently – they need to pay attention to different factors – depending on the activity that have been chosen for relocation. This finding however needs to be more thoroughly studied and investigated so that the effects of different activities can be better understood.

With exception of the subsample of service & administration and R&D, geographical distance was as the only variable consistently found to provide support for hypothesis 4a, stating that geographical distance increases the likelihood of cost estimation failures as a consequence of hidden costs. The effect on cost estimation failures is considerably higher in the case where the organizations offshore production activities. Obviously, geographic distance influences the costs of transportation and it therefore makes sense that this factor has an impact when organizations offshore production activities, as these activities are more likely to involve physically transportation. The finding is consistent with existing research, which states that geographical distance accounts for the largest share of the explained variance in psychic distance (Håkanson & Ambos, 2010), and that geographic distance is the single most influential 'trade inhibitor' (Dow & Karunaratna, 2006). This could indicate that before managers change their strategies (from home production to offshore), they must determine the total costs of each product produced offshore in order to better

understand the shifting trade-offs between cost savings from offshoring (such as lower labor costs) and rising transportation costs (Goel et al., 2008).

A research conducted by Mellahi & Collings (2009) draws on the theories of agency theory and bounded rationality in discussing the underlying causes of talent management failures in multinational enterprises due to social and geographical separation between groups. Geographical distance limits social bonds between the decision-makers at the headquarters and the talented individuals at the offshore location, which potentially prevent full exploitation of talent (Mellahi & Collings, 2009). Other studies of bounded rationality and the effect of geographical distance highlights that top management does not have sufficient insights into the strengths and weaknesses of subsidiaries or the opportunities and threats faced by it. Managers are therefore incapable of making correct decisions when they are in lack of sufficient information or information-processing capabilities (Rigman and Verbeke, 2003). According the study by Rigman & Verbeke (2003) organizations are consequently faced with transaction cost challenges, which calls for the introduction of transaction costs economizing tools so that bounded rationality problems are reduced. Hence, that we find that the problem of bounded rationality increases with geographical distance is consistent with the current literature.

A more rather inconsistent finding is the one of economic development. As mentioned in the theoretical foundation we chose to investigate economic development instead of economic differences, as the existent literature points in the direction that uncertainty and unpredictability of the economic development have an effect on cost estimation failures. The result of economic development seems only to be significant when included in the subsample for production, the effect on cost estimation failures however seems to be substantial. A finding that is consistent with the fact that the main motivation behind offshoring decisions for companies that relocates production activities is the search for low cost labor (Manning et al., 2008). The result shows that the economic development in a country is to increase the likelihood of cost estimation failures providing support for hypothesis 5. The finding indicates that low cost labor might not be the sole factor that should tip the decision to offshore. Other studies show that the potential labor savings in 2003 was $100, whereas it has decreased to only $45 as of 2008 because of wage inflation (Goel et al., 2008). As an example the wage differences between Mexico and China has decreased significantly. In 2003, Mexican workers earned over twice what Chinese workers did, in recent years that gap has decreased significantly. Consequently it could for US production companies be more economically beneficial to produce at a plant closer to the consumers (in Mexico, where the mix of logistics and labor costs is more favorable) (Goel et al., 2008).

Could the above findings indicate that decision-makers should consider back-sourcing of activities or at least considering more near-shore location? This is difficult to conclude, however it certainly indicates that the economic conditions are changing and potentially undermining some of the benefits of offshoring. However,

as economic development was found only to be significant for production activities more research needs to be conducted regarding the effect of economic development on cost estimation failures, to be able to make solid conclusions.

Much research has been conducted on cultural differences and the term has in some studies been treated as a synonym or even a proxy for psychic distance (Kogut & Singh, 1988). The fact that cultural differences both failed to reach statistical significance in any model of this thesis and that it lacked support for hypothesis 1 is not a unique finding. According Dow & Karunaratna (2006) it was found in recent empirical studies that 68 of the 80 studies used a composite measure of Hofstede's cultural dimensions as their sole measure of cultural distance; and the main effects were significant but small in one case, and non-significant in the other. Hence, the fact that cultural differences failed to reach statistical significance in any of the models in this thesis is not a surprising finding. Political differences were found only to be significant in the models of the two subsamples, the effect on cost estimation failures was however found to be inconsistent. Differences in language was found to be only partly significant and in discrepancy with the developed hypothesis. Time zone differences failed, like cultural differences, to reach statistically significance. A factor that might explain the lack of statistical significance and evidence for time zone differences, is that time zone differences for some companies are found to be an asset (time zone differences may allow companies to switch around-the-clock operation), whereas difference in time zone might be an issue for other companies (time zone differences create uncertainty about the ability for rapid communication) (Aubert et al., 2009). The effect of time zone differences may be influenced by the activities that have been relocated, i.e. beneficial for call centers as it allows for 24-hour service.
Do these findings imply that psychic distance, in exception of geographical distance, is irrelevant to incorporate when assessing an offshore decision?

We are not able to conclude with certainty whether psychic distance, with the exception of geographical distance, is irrelevant to incorporate in the strategic decision-making as the majority of the variables were found to be insignificant or inconsistent in the effect on cost estimation failures. We can however conclude that geographical distance consistently seems to play an important role when analyzing psychic distance. We feel confident in concluding, based on the analysis, that psychic distance should not prevent companies from relocating activities to foreign countries. Companies should nonetheless take the challenges associated with geographical distance into account when assessing offshore opportunities, as this factor seems to increase the likelihood of cost estimation failures.

For decades researchers have studied the concept of psychic distance and the effect on: the decision to export, which market to select, the entry mode choices, the degree of control and adaption in a foreign market and the international performance (Johanson & Wiedersheim-Paul, 1975; Johanson & Vahlne, 1977; Ghemawat, 2001; Dow & Karunaratna, 2006; Dow, 2009). However, not many researchers have presented

any significant findings and hence have failed to conclude the actual effect of psychic distance. Dow & Karunaratna (2006) imply in their research that the effect of psychic distance is declining. The fact that this thesis fails to find statistical significance for some of the psychic distance factors and their effect on the level of cost estimation failures are somewhat not unambiguous, and could potentially be consistent with their finding. Does this imply that previous research on psychic distance is incorrect?

The declining effect of psychic distance and the lack of evidence in this thesis might be explained by the 'born-global' phenomenon. What differentiates born-global firms from other international firms is that they originate internationally. A born-global firm has a global focus from the beginning and allocates their resources to international ventures. They begin with a borderless worldview, and immediately develop strategies to expand themselves abroad (Kudina et al., 2008). The 'born-global' phenomenon of firms rapidly entering very distant markets suggests, for example, that the variance in the psychic distance perceptions of individual managers has increased, perhaps dramatically, over time (Håkanson & Ambos, 2010). Further it implies that the effect of psychic distance might be decreasing as the world – and the organizations become more globally orientated (Ietto-Gillies, 2012). Dow (2005) found that psychic distance impacted on the internationalization of born-global firms, although the impact was less significant compared to non-born-global firms. Thus, a reduced sensitivity to psychic distance plays a key role in born-global firms. The concept of psychic distance was in its origin introduced by Beckerman in 1956 and popularized in the 1970s as the scholars of Uppsala University developed the concept as a part of their work in understanding the success of foreign market development. The theory was therefore developed long before the information and communication technology revolution, starting in the early 1990s, which contributed to an evolution of the offshore practice (Pedersen et al., 2013). This indicates that the theory of psychic distance might be outdated or at least play a smaller role than first anticipated and consequently might be a poor indicator of today's globalization challenges.

Based on the reasoning from above, we are not able to conclude that the existent theory is incorrect, however it could be argued that the theory of psychic distance might need to be revisited and adapted so that the theory fit today's modern organizations, where new technologies and deeper knowledge of foreign locations are a common part of the everyday life in an organization.

Finally it is worth noting that a number of the control variables were found to be significant throughout the models – supporting existent literature of the effect of: *previously experience* (Dibbern et al., 2007; Larsen et al., 2012) and *increased complexity within the offshore organization* (Dibbern et al., 2007; Kumar et al., 2009; Larsen, 2012; Larsen et al., 2012). Furthermore the parameter estimate for *characteristic of the relocated activity* were found to be significant only for the subsample of service & administration and R&D supporting the findings of Dibbern et al. (2007); Stringfellow et al. (2008); Kumar et al. (2009) and Larsen et al. (2012). Consequently future research could focus on these factors when investigating hidden costs.

5.2. Implications and future research

The study conducted in this thesis has a number of implications that should be addressed in the case of future research of the cost estimation failures associated with offshoring and the effect of psychic distance.

5.2.1. Dependent variable

First and foremost, the concept of cost estimation failures and hidden costs is a difficult variable to operationalize and measure. Hidden costs have in this thesis been operationalized as the respondents' perception of the difference between the expected and actual cost level associated with offshoring. It has been measured on a Likert scale from 1-7, where the respondents were asked to indicate whether the companies experienced any difference between the expected costs and the actual costs associated with their decision to offshore. This method of operationalization does not necessarily capture all hidden costs. The respondents' perception of the definition of hidden costs might have had an influence on the way the respondents' answered the survey. For example, the way respondents perceive costs (in relation to how they experienced the actual cost level associated with offshoring compared to the actual) could potentially vary among them. Some respondents might only perceive costs as fixed costs, whereas other may perceive costs as both fixed and variable costs. These differences in how the respondents perceive and answer the survey can cause biased results. In addition to this, the data for this thesis are based on data, which are collected retrospectively – after the implementations have been made. As highlighted by Larsen et al. (2012) it can be more difficult to retrospectively assess differences between expected and actual costs the older a project is. As a consequent to the above mentioned, a different research design using observations collected before and after the offshoring implementation, and a more qualitative approach, would in this matter have been more appropriate compared to the research design used in this thesis. Consequently, hidden costs might have been miscalculated in this thesis and another result might have been obtained if the thesis had used another form of operationalization or another research design.

The theoretical foundation of the dependent variables has in this thesis been limited to the role of organizational effect on cost estimation failures, leaving out an important issue of the risk aversion of managers in the decision-making and cost estimation process. Managers with more internationalization experience will show less risk aversion than managers with less internationalization experience (Buckley et al., 2007). For example, situations where the managers possess a high knowledge regarding the psychic distance based on previous experience may actually entail cost estimation failures as they assess the projects to be less complicated or less risky. Future research could therefore investigate the risk aversion of managers when studying cost estimation failures and the effect of psychic distance.

5.2.2. Independent variables

Several studies have indicated that psychic distance is subjective and its impact can vary among the employees within a firm – in other words psychic distance captures the manager's individual perception of the differences between the home and the host country (Shenkar, 2001; Dow & Karunaratna, 2006; Håkanson & Ambos, 2010). This implies that homogeneity within an organization and a country does not exist. Accordingly, psychic distance should ideally be estimated based on the perceived psychic distance of an individual firm or a decision-maker. The fact that geographical distance was found as the only psychic distance factor to consistently having an effect on cost estimation failures might be explained by the fact that some aspects of geographical distance, such as transport costs, would not change given a subjective operationalization.

In this thesis we primarily used survey data, and as a consequence we were unable to analyze the actual decision-making process and the perception of psychic distance as the relocation occurred. A qualitative approach might have been more suitable to assess the different psychic distance factors causing cost estimation failures in the decision-making processes. Once that researchers and decision-makers better understand the effect of perceived distance, researchers can begin to make substantially better predictions concerning a variety of international business decisions (Dow & Karunaratna, 2006).

The theory of the Uppsala Scholars highlights that firms mainly interact with foreign countries and markets that are more familiar to them, markets of which they have some kind of knowledge of and/or previous experience with. Consequently, it could have been beneficial to include whether or not the respondents had previous experience with the specific market/country chosen for the relocation. The survey used for this analysis had data on whether or not the respondents possessed previous experience with offshoring, but the question of previous experience was not specified into further details.

5.2.3. The economic specification

As we expected a linear relationship between the dependent variable and the independent variables the statistical analysis ordinary least square (OLS) method was chosen as the most suitable. However, there are also some disadvantages to OLS, as the assumptions required for OLS are stringent. If any of these assumptions are not met, the OLS estimation procedure breaks down and the estimator no longer enjoys all of the properties previously discussed (Burke, 2010). Another type of regression model, the Truncated Tobit model, could therefore have been used in the analysis. The Truncated Tobit model is a model for a dependent variable that takes on the value zero with positive probability but is roughly continuously distributed over strictly positive values. Further, the model is a linear regression model for cross-sectional data in which the sampling scheme entirely excludes, on the basis of outcomes on the dependent variable, part of the population.

6. Conclusion

The overall objective of this thesis was to provide knowledge of the reason for cost estimation failures in the decisions to offshore, by studying the research question:

How does psychic distance between countries affect the likelihood of cost estimation failures in the strategic decision to offshore?

The relationship of cost estimation failures in offshoring and the psychic distance between countries have been investigated. Hereby, adding to the existent research on cost estimation failures in the strategic decision to offshore and the impact of bounded rationality.

In particular, this thesis argues that hidden costs and consequently cost estimation failures occur in situations where the psychic distance among the included countries is high. In those situations decision-makers are likely to be subject to bounded rationality as it is difficult for them to predict the actual challenges when offshoring to a psychic distant country. The decision-makers are exposed to new complexities, challenges and uncertainties when allocating resources and estimating the costs and benefits – hence cost estimation failures are more likely to occur.

Based on the study conducted, we are not able to conclude with certainty *how psychic distance between countries affects the likelihood of cost estimation failures in the strategic decision to offshore*. The findings regarding the effect of the psychic distance factors included in this thesis only indicated that decision-makers should pay attention to the *geographical distance* when assessing an offshore decision, as geographical distance is found to increase the likelihood of cost estimation failures. The rest of the psychic distance factors, *cultural differences, language differences, political differences, time zone differences and economic development,* were either found to be statistically insignificant or to have an inconsistent effect on cost estimation failures, and hence the actual effect could not be concluded. We however feel confident in concluding, that psychic distance should not prevent companies and decision-makers from relocating activities to foreign countries.

The lack of evidence in this thesis is however not a unique finding. Other researchers suggest a declining effect of psychic distance – a suggestion that might be explained by the new phenomenon of 'born-global' organizations. As a result we suggest that the theory of psychic distance might need to be revisited and adapted so that the theory fit today's modern organizations, where new technologies and deeper knowledge of foreign locations are a common part of the everyday life in an organization. Consequently, the relationship between decision-makers estimation abilities and the psychic distance between the home and the host country should be analyzed form other perspectives, through a more quantitative approach incorporating the actual actions taken by managers in the decision-making process.

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8. Appendix Overview

Appendix 1: Countries included in the regression

Europe	Asia	South America	Middle East	Africa	North America
Belgium	Bangladesh	Bolivia	Saudi Arabia	Kenya	US
Bulgaria	China	Brazil	UAE		
Czech Republic	Hong Kong	Mexico			
Estonia	India				
France	Indonesia				
Germany	Japan				
Hungary	Malaysia				
Iceland	Philippines				
Italy	Russia				
Latvia	Singapore				
Lithuania	Thailand				
Netherlands	Vietnam				
Norway					
Poland					
Romania					
Slovakia					
Spain					
Sweden					
Turkey					
UK					
Ukraine					

Appendix 2: Hofstede

Country	PDI	IDV	MAS	UAI	LTO	Kogut and Singh's index
Bangladesh	80	20	55	60	47	4.19
Belgium	65	75	54	94	82	4.71
Bolivia*	69	38	49	76	44	3.30
Brazil	69	38	49	76	44	3.30
Bulgaria	70	30	40	85	69	4.36
China	80	20	66	30	87	5.42
Czech Republic	57	58	57	74	70	3.14
Estonia	40	60	30	60	82	2.07
France	68	71	43	86	63	3.40
Germany	35	67	66	65	83	3.06
Hong Kong	68	25	57	29	61	3.19
Hungary	46	80	88	82	58	4.11
Iceland	30	60	10	50	28	0.47
India	77	48	56	40	51	2.78
Indonesia	78	14	46	48	62	4.12
Italy	50	76	70	75	61	3.06
Japan	54	46	95	92	88	6.77
Kenya	70	25	60	50		3.94
Latvia	44	70	9	63	69	1.56
Lithuania	42	60	19	65	82	2.19
Malaysia	100	26	50	36	41	4.60
Mexico	81	30	69	82	24	5.17
Netherlands	38	80	14	53	67	1.08
Norway	31	69	8	50	35	0.40
Philippines	94	32	64	44	27	4.52
Poland	68	60	64	93	38	4.07
Romania	90	30	42	90	52	5.34
Russia	93	39	36	95	81	6.36
Saudi Arabia	95	25	60	80	36	5.76
Singapore	74	20	48	8	72	3.86
Slovakia	100	52	100	51	77	7.39
Spain	57	51	42	86	48	2.81
Sweden	31	71	5	29	53	0.31
Thailand	64	20	34	64	32	2.96
Turkey	66	37	45	85	46	3.51
UK	35	89	66	35	51	1.43
Ukraine*	93	39	36	95	81	6.36
United Arab Emirates	80	38	53	68	23	3.72
US	40	91	62	46	26	1.45
Vietnam	70	20	40	30	57	2.95
Denmark	18	74	16	23	35	

Source: (Hofstede, http://geert-hofstede.com/dimensions, 2014)

*Note: There exist no Hofstede values for both Bolivia and Ukraine. We have therefore chosen to examine Bolivia with the same cultural values as Brazil and Ukraine as Russia.

Appendix 3: Language differences

Home Country	Host Country	Language differences
Denmark	Bangladesh	4
	Belgium	3
	Bolivia	4
	Brazil	4
	Bulgaria	4
	China	5
	Czech Republic	4
	Estonia	4
	France	4
	Germany	3
	Hong Kong	5
	Hungary	5
	Iceland	2
	India	3
	Indonesia	5
	Italy	4
	Japan	5
	Kenya	3
	Latvia	4
	Lithuania	4
	Malaysia	5
	Mexico	4
	Netherlands	3
	Norway	2
	Philippines	3
	Poland	4
	Romania	4
	Russia	4
	Saudi Arabia	5
	Singapore	3
	Slovakia	4
	Spain	4
	Sweden	2
	Thailand	5
	Turkey	5
	UK	3
	Ukraine	4
	United Arab Emirates	5
	US	3
	Vietnam	5

Source: (Dow, Psychic distance Stimuli, 2006)

Appendix 4: POLCON

Country	2008	2009	2010	2011	2012	Average	Political difference
Bangladesh	0.00	0.25	0.25	0.26	0.27	0.21	0.33
Belgium	0.71	0.71	0.71	0.71	0.71	0.71	0.17
Bolivia	0.40	0.40	0.35	0.35	0.36	0.37	0.17
Brazil	0.41	0.41	0.42	0.09	0.09	0.28	0.26
Bulgaria	0.53	0.53	0.47	0.47	0.47	0.49	0.04
China	0.00	0.00	0.00	0.00	0.00	0.00	0.54
Czech Republic	0.56	0.40	0.40	0.57	0.57	0.50	0.04
Estonia	0.52	0.52	0.52	0.52	0.50	0.52	0.02
France	0.56	0.49	0.49	0.49	0.52	0.51	0.03
Germany	0.47	0.47	0.50	0.50	0.50	0.49	0.05
Hungary	0.35	0.35	0.35	0.33	0.33	0.34	0.20
Iceland	0.49	0.49	0.51	0.51	0.51	0.51	0.03
India	0.16	0.16	0.21	0.21	0.21	0.19	0.35
Indonesia	0.09	0.09	0.56	0.56	0.56	0.37	0.17
Italy	0.33	0.45	0.45	0.45	0.45	0.43	0.11
Japan	0.50	0.50	0.49	0.48	0.48	0.49	0.05
Kenya	0.48	0.48	0.48	0.48	0.48	0.48	0.06
Latvia	0.56	0.56	0.56	0.50	0.14	0.46	0.07
Lithuania	0.55	0.56	0.56	0.56	0.56	0.56	0.02
Malaysia	0.12	0.37	0.37	0.37	0.37	0.32	0.22
Mexico	0.24	0.24	0.26	0.26	0.26	0.25	0.28
Netherlands	0.67	0.67	0.67	0.14	0.12	0.45	0.09
Norway	0.53	0.53	0.51	0.51	0.51	0.51	0.02
Philippines	0.37	0.37	0.37	0.36	0.36	0.37	0.17
Poland	0.46	0.46	0.46	0.46	0.46	0.46	0.08
Romania	0.43	0.41	0.41	0.41	0.41	0.41	0.12
Russia	0.32	0.32	0.32	0.32	0.43	0.34	0.20
Saudi Arabia	0.00	0.00	0.00	0.00	0.00	0.00	0.54
Singapore	0.03	0.03	0.03	0.03	0.09	0.04	0.49
Slovakia	0.53	0.53	0.53	0.51	0.51	0.52	0.02
Spain	0.31	0.28	0.28	0.28	0.37	0.30	0.24
Sweden	0.51	0.51	0.51	0.15	0.15	0.36	0.18
Thailand	0.43	0.43	0.43	0.43	0.41	0.42	0.12
Turkey	0.37	0.37	0.37	0.37	0.37	0.37	0.17
Ukraine	0.47	0.47	0.47	0.47	0.47	0.47	0.07
UK	0.39	0.39	0.39	0.41	0.41	0.40	0.14
UAE					0.66	0.66	0.12
US	0.39	0.40	0.40	0.41	0.41	0.40	0.14
Vietnam	0.11	0.11	0.11	0.11	0.11	0.11	0.43
Denmark	0.54	0.54	0.54	0.54	0.53	0.54	

Source: (Henisz, 2012)

Appendix 5: Geographical distance and time zone differences

From Copenhagen, Denmark

Country	Capital	Air distance (km)	Log(distance)	Time zone	ABS(time zone)
Bangladesh	Dhaka	7.109	8.87	5.0	5.0
Belgium	Brussels	767	6.64	0.0	0.0
Bolivia	Sucre	10.998	9.31	-5.0	5.0
Brazil	Brasilia	9.718	9.18	-4.0	4.0
Bulgaria	Sofia	1.638	7.40	1.0	1.0
China	Beijing	7.219	8.88	7.0	7.0
Czech Republic	Prague	634	6.45	0.0	0.0
Estonia	Tallinn	839	6.73	1.0	1.0
France	Paris	1.030	6.94	0.0	0.0
Germany	Berlin	356	5.87	0.0	0.0
Greenland	Nuuk	3.546	8.17	-4.0	4.0
Hong Kong	Hong Kong	8.683	9.07	7.0	7.0
Hungary	Budapest	1.014	6.92	0.0	0.0
Iceland	Reykjavik	2.114	7.66	-1.0	1.0
India	New Delhi	5.857	8.68	4.5	4.5
Indonesia	Jakarta	10.834	9.29	6.0	6.0
Italy	Rome	1.533	7.33	0.0	0.0
Japan	Tokyo	8.711	9.07	8.0	8.0
Kenya	Nairobi	6.688	8.81	2.0	2.0
Latvia	Riga	727	6.59	1.0	1.0
Lithuania	Vilnius	816	6.70	1.0	1.0
Malaysia	Kuala Lumpur	9.667	9.18	7.0	7.0
Mexico	Mexico city	9.525	9.16	-7.0	7.0
Netherlands	Amsterdam	623	6.43	0.0	0.0
Norway	Oslo	484	6.18	0.0	0.0
Philippines	Manila	9.790	9.19	7.0	7.0
Poland	Warsaw	671	6.51	0.0	0.0
Romania	Bucharest	1.576	7.36	1.0	1.0
Russia	Moscow	1.566	7.36	3.0	3.0
Saudi Arabia	Riyadh	4.424	8.39	2.0	2.0
Singapore	Singapore	9.971	9.21	7.0	7.0
Slovakia	Bratislava	894	6.80	0.0	0.0
Spain	Madrid	2.075	7.64	0.0	0.0
Sweden	Stockholm	523	6.26	0.0	0.0
Thailand	Bangkok	8.629	9.06	6.0	6.0
Turkey	Ankara	2.301	7.74	1.0	1.0
UK	London	958	6.86	-1.0	1.0
Ukraine	Kyiv	1.332	7.19	1.0	1.0
UAE	Abu Dhabi	4.848	8.49	3.0	3.0
US	Washington D.C.	7.810	8.96	-5.0	5.0
Vietnam	Hanoi	8.302	9.02	6.0	6.0

Source: (GeoDataSource.com, 2014)

Appendix 6: GPD development

Country	2008	2009	2010	2011	2012	GDP development
Bangladesh	538	598	664	732	752	40%
Belgium	47.374	43.834	43.242	46.464	43.399	-8%
Bolivia	1.696	1.735	1.935	2.320	2.576	52%
Brazil	8.623	8.373	10.978	12.576	11.340	32%
Bulgaria	6.917	6.524	6.453	7.287	6.977	1%
China	3.414	3.749	4.433	5.447	6.091	78%
Czech Republic	21.710	18.884	18.949	20.580	18.690	-14%
Estonia	17.723	14.506	14.246	16.886	16.833	-5%
France	43.992	40.488	39.443	42.560	39.746	-10%
Germany	44.132	40.270	40.408	44.355	42.597	-3%
Hong Kong	31.516	30.697	32.558	35.173	36.796	17%
Hungary	15.365	12.635	12.750	13.784	12.560	-18%
Iceland	53.029	38.039	39.507	44.031	42.339	-20%
India	1.042	1.147	1.417	1.540	1.503	44%
Indonesia	2.178	2.272	2.947	3.471	3.557	63%
Italy	38.563	35.073	33.982	36.180	33.816	-12%
Japan	37.972	39.473	43.118	46.135	46.731	23%
Kenya	786	768	787	800	943	20%
Latvia	15.464	12.082	11.447	13.827	13.947	-10%
Lithuania	14.775	11.649	11.722	14.158	14.172	-4%
Malaysia	8.460	7.278	8.754	10.058	10.432	23%
Mexico	9.560	7.691	8.885	9.717	9.749	2%
Netherlands	52.951	48.174	46.773	49.886	45.960	-13%
Norway	95.190	78.457	86.156	99.173	99.636	5%
Philippines	1.921	1.832	2.136	2.358	2.587	35%
Poland	13.886	11.295	12.302	13.382	12.710	-8%
Romania	9.949	8.069	8.139	9.064	8.437	-15%
Russia	11.700	8.616	10.710	13.284	14.037	20%
Saudi Arabia	19.714	16.013	19.327	24.116	25.136	28%
Singapore	39.383	37.860	45.639	51.242	52.052	32%
Slovakia	18.201	16.196	16.151	17.760	16.893	-7%
Spain	34.674	31.369	29.732	31.118	28.274	-18%
Sweden	52.731	43.640	49.360	56.755	55.040	4%
Thailand	4.118	3.979	4.803	5.192	5.480	33%
Turkey	10.379	8.626	10.135	10.605	10.666	3%
Ukraine	3.891	2.545	2.974	3.576	3.867	-1%
United Arab Emirates	46.403	33.013	34.049	39.058	41.692	-10%
UK	43.510	35.476	36.425	39.186	38.920	-11%
US	48.407	46.999	48.358	49.854	51.749	7%
Vietnam	1.165	1.232	1.334	1.543	1.755	51%

Source: (World Bank, 2014)

Appendix 7: Regression output for the full model (model 7a)

Number of Observations Read	184
Number of Observations Used	158
Number of Observations with Missing Values	26

Analysis of Variance

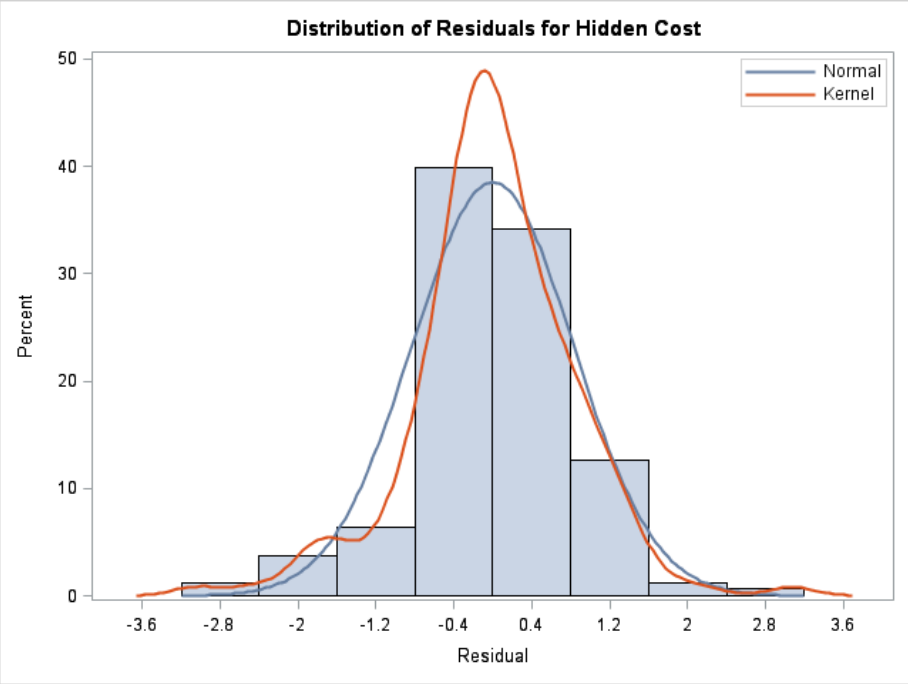
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	14	20.43541	1.45967	1.93	0.0273
Error	143	107.91902	0.75468		
Corrected Total	157	128.35443			

Root MSE	0.86872	R-Square	0.1592
Dependent Mean	4.15190	Adj R-Sq	0.0769
Coeff Var	20.92349		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Tolerance	Variance Inflation
Intercept	1	2.54773	1.53476	1.66	0.0991	.	0
HOF1	1	-0.03094	0.05626	-0.55	0.5832	0.56896	1.75758
Language	1	-0.18834	0.11830	-1.59	0.1136	0.44123	2.26638
POLCON	1	-0.37937	0.69584	-0.55	0.5865	0.30636	3.26414
log_dist	1	0.23479	0.18393	1.28	0.2038	0.09959	10.04119
Time zone	1	-0.03804	0.09370	-0.41	0.6854	0.06455	15.49141
GDP development	1	0.54765	0.59532	0.92	0.3592	0.30957	3.23029
Previous experience	1	-0.11964	0.04459	-2.68	0.0082	0.66510	1.50354
Simplicity	1	-0.08667	0.07093	-1.22	0.2238	0.79416	1.25920
Complex	1	0.17397	0.06669	2.61	0.0101	0.69966	1.42926
ln_employ global	1	0.10488	0.04696	2.23	0.0271	0.67998	1.47064
ln_size of implementation	1	-0.03075	0.06579	-0.47	0.6409	0.70141	1.42570
Year after impl.	1	0.00329	0.01888	0.17	0.8620	0.83944	1.19127
Service/adm.	1	-0.03071	0.22993	-0.13	0.8939	0.47784	2.09275
Production	1	0.02272	0.19208	0.12	0.9060	0.52083	1.92003

Durbin-Watson D	1.956
Number of Observations	158
1st Order Autocorrelation	-0.010



Estimated Regression Coefficients				
Parameter	Estimate	Standard Error	t Value	Pr > |t|
Intercept	2.5502532	1.50539371	1.69	0.0922
HOF1	-0.0300602	0.04863298	-0.62	0.5374
Language	-0.1792229	0.10255528	-1.75	0.0825
POLCON	-0.3851901	0.67593206	-0.57	0.5696
log_dist	0.2321794	0.18441764	1.26	0.2099
Time zone	-0.0373678	0.08708769	-0.43	0.6685
GDP development	0.5376586	0.64700432	0.83	0.4072
Previous experience	-0.1193537	0.04643670	-2.57	0.0111
Simplicity	-0.0855118	0.07183238	-1.19	0.2357
Complex	0.1734264	0.05983303	2.90	0.0043
ln_employ global	0.1007530	0.04160463	2.42	0.0166
ln_size of implementation	-0.0261411	0.05295633	-0.49	0.6223
Year after impl.	0.0020469	0.01668612	0.12	0.9025

Code for Robust Standard Error:

```
proc surveyreg DATA=WORK.DATA_FIFTH_DRAFT;
cluster "Hidden Cost"n  HOF1 Language POLCON log_dist "Time zone"n "GDP
development"n "Previous experience"n Simplicity Complex "ln_employ
global"n "ln_size of implementation"n "Year after impl."n
                                                    ;
MODEL "Hidden Cost"n =  HOF1 Language POLCON log_dist "Time zone"n "GDP
development"n "Previous experience"n Simplicity Complex "ln_employ
global"n "ln_size of implementation"n "Year after impl."n
                                                    ;
run;
quit;
```