

**MASTER**

**Towards business-IT alignment in IT outsourcing context**

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# Towards Business-IT Alignment in IT Outsourcing Context

in partial fulfilment of the requirements for the degree of  
*Master of Science in Business Information Systems*

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# Abstract

Information technology has become a key business function for almost every organisation and plays an increasingly pro-active role in developing long-term business strategy. Consequently, there is a need to ensure alignment between IT and business strategies, goals and plans. Business-IT alignment (BIA) refers to the ability of the corporate IT function to closely reflect the requirements and desires of the business stakeholders.

Usually BIA is understood at the organizational level between business and IT teams, whereas IT outsourcing (ITO) extends boundaries and implies inclusion of a third party, namely IT services provider. In that situation, BIA is harder to achieve and manage. Literature analysis revealed the lack of research on the subject of impact ITO on the level of internal alignment within a company. This research gap is the focus of the current Master Thesis.

In order to fulfil this gap, the first goal of the research is to construct a model for assessing the influence of IT outsourcing on the level of business-IT alignment maturity. The designed model is based on the concepts adopted from the existing literature. Subsequently the measurement mechanism is explained in detail. The second goal is to validate the proposed model and formulate the hypothesis about the effect of IT outsourcing on the level of alignment maturity. The model was tested empirically using the data from four case study companies and three surveys.

The results indicate that IT outsourcing has a positive impact on the level of business-IT alignment. Also findings suggest several hypotheses with respect to business-IT alignment and its dimensions, IT outsourcing, and its success factors. However, these results should be considered with care. The sample set of seven subjects is not valid to provide a statistical generalization. The hypothesis should be further tested with a larger sample of companies. The empirical validation allowed to realize the limitations of the research and demonstrated directions of the future research.

# Contents

<b>Acknowledgements</b> .....	<b>ii</b>
<b>Abstract</b> .....	<b>iii</b>
<b>List of abbreviations</b> .....	<b>vii</b>
<b>List of figures</b> .....	<b>viii</b>
<b>List of tables</b> .....	<b>ix</b>
<b>Chapter 1 Introduction</b> .....	<b>10</b>
1.1 Problem statement .....	10
1.2 Research goal .....	12
1.3 Research questions.....	12
1.4 Outline .....	13
<b>Chapter 2 Research methodology</b> .....	<b>14</b>
2.1 Research process .....	14
2.2 Research method .....	16
2.3 Data collection methods.....	17
2.3.1 Secondary research.....	17
2.3.2 Primary research.....	18
2.4 Reliability and validity .....	18
2.4.1 Reliability .....	19
2.4.2 Validity.....	20
<b>Chapter 3 Literature analysis</b> .....	<b>21</b>
3.1 Underlying definitions .....	21
3.2 Relationship between BIA and ITO.....	22
3.3 Relationship between alignment and cloud computing .....	25
3.4 Concluding remarks .....	27
<b>Chapter 4 Reference models</b> .....	<b>28</b>
4.1 Business-IT alignment models .....	28

4.2	Selection the BIA measurement model.....	29
4.3	IT outsourcing maturity models .....	31
4.4	Selection the ITO reference model.....	32
4.5	IT outsourcing factors.....	33
<b>Chapter 5</b>	<b>Designed model .....</b>	<b>39</b>
5.1	Development of the model .....	39
5.1.1	Employee engagement dimension.....	40
5.1.2	Technology scope .....	42
5.2	Measurement approach.....	44
<b>Chapter 6</b>	<b>Findings.....</b>	<b>50</b>
6.1	Conduction of the empirical study.....	50
6.1.1	Set up of the empirical study .....	50
6.1.2	Questionnaire .....	51
6.1.3	Evaluation of the reliability and validity of questionnaire.....	53
6.2	Case descriptions.....	54
6.3	Discussion of the case study results .....	55
6.3.1	Results Company A.....	55
6.3.2	Results Company B .....	58
6.3.3	Results Company C.....	61
6.3.4	Results Company D.....	63
6.4	General findings .....	66
6.4.1	Business-IT alignment.....	67
6.4.2	ITO relationships .....	72
6.4.3	Relationship between ITO and BIA .....	73
6.4.4	Relation to the previous studies .....	78
6.4.5	Formulation of hypotheses.....	80
6.4.6	Reflection on the designed model .....	82
<b>Chapter 7</b>	<b>Conclusion .....</b>	<b>83</b>

7.1	Research conclusions .....	83
7.2	Limitations .....	85
7.3	Future research .....	86
	<b>References.....</b>	<b>87</b>
	<b>Appendix A. Literature review (full version).....</b>	<b>99</b>
	<b>Appendix B. Business-IT alignment frameworks .....</b>	<b>126</b>
	<b>Appendix C. Comparative analysis of the business-IT alignment frameworks ....</b>	<b>131</b>
	<b>Appendix D. IT outsourcing maturity models.....</b>	<b>132</b>
	<b>Appendix E. Comparative analysis of IT outsourcing maturity models.....</b>	<b>136</b>
	<b>Appendix F. Identification of ITO factors by experts.....</b>	<b>137</b>
	<b>Appendix G. Examination of IT outsourcing factors.....</b>	<b>144</b>
	<b>Appendix H. Employee engagement questions.....</b>	<b>145</b>
	<b>Appendix I. Attributes of Technology scope dimension.....</b>	<b>147</b>
	<b>Appendix J. Dimensions, attributes and levels of Luftman’s model .....</b>	<b>148</b>
	<b>Appendix K. Levels of business-IT alignment .....</b>	<b>153</b>
	<b>Appendix L. Interview questions .....</b>	<b>154</b>
	<b>Appendix M. Questionnaire .....</b>	<b>156</b>
	<b>Appendix N. Mathematical rationale for statistical analysis .....</b>	<b>157</b>

## List of abbreviations

BIA	Business-IT alignment
BPO	Business Process Outsourcing
CFO	Chief Financial Officer
CIO	Chief Information Officer
ICT	Information and communication technologies
IS	Information system
IT	Information technology
ITO	IT outsourcing
KPO	Knowledge Process Outsourcing
SOA	Service-oriented architecture



## List of figures

Figure 1. Research methodology .....	15
Figure 2. Designed model .....	43
Figure 3. Designed model (numbered) .....	44
Figure 4. Hierarchy of Luftman's model .....	46
Figure 5. Calculation of BIA maturity score.....	49
Figure 6. BIA maturity score in Company A .....	56
Figure 7. BIA maturity score in Company B .....	59
Figure 8. BIA maturity score in Company C.....	61
Figure 9. BIA maturity score in Company D .....	63
Figure 10. Correlation between BIA and ITO levels .....	76

## List of tables

Table 1. Comparison of case study and survey methods.....	17
Table 2. Overview of alignment frameworks .....	29
Table 3. Selected ITO studies and relevant criteria .....	33
Table 4. ITO factors and corresponding questions .....	45
Table 5. Example of maturity of the one attribute within one criterion .....	47
Table 6. Values of Cronbach's $\alpha$ reliability coefficient .....	53
Table 7. Overview of the case study companies.....	55
Table 8. Overview of the survey companies .....	66
Table 9. Maturity scores and deviations .....	68
Table 10. Current and desired BIA levels.....	69
Table 11. Perceived vs. real BIA maturity level.....	70
Table 12. Communication level and size of the company.....	71
Table 13. Reasons of outsourcing .....	72
Table 14. Performance metrics in IT outsourcing.....	73
Table 15. BIA and ITO maturity levels.....	74
Table 16. Pearson's correlation coefficient .....	77

# Chapter 1 Introduction

The introduction chapter explains the background of the research and provides a clear statement of the problem under investigation. The problem discussion is followed by research goals and questions. An outline of the report concludes the introductory part.

## 1.1 Problem statement

Information technologies (IT) have integrated into business environment and become an important part of most enterprises. Tallon et al. (Tallon, P.P., Kraemer, K.L., & Gurbaxani, V. 2000) found in their academic study that IT increases the competitive advantages and enhances the firm's position in the market. Most organizations in the modern world are fundamentally dependent on their information systems and information technologies (Peppard, J., & Ward, J. 2004).

Over the last decades the role and impact of information technologies have changed significantly. Starting from traditional function of business support, IT is evolving into a vital component of organizational strategy for almost any kind of business. Many organisations realize that alignment of the information technology and business objectives is a managerial priority for solving organizational and business challenges (Tallon, P.P., & Kraemer, K.L. 2011). Business-IT alignment (BIA) refers to applying IT in an appropriate and timely way in harmony with business strategies, goals and needs (Henderson, J.C., & Venkatraman, N. 1993). A recent study rated alignment between business and IT as the number one priority of IT executives (Luftman, J., & Ben-Zvi, T. 2011). Many empirical researches have proved that BIA make a positive impact on business performance ((Kearns, G. S., & Sabherwal, R. 2006); (McAdam, R., & Bailie, B. 2002)).

Due to the increasing global competition across all industries and the aspiration to achieve cost reduction, companies need to determine their core competencies. Focus on core competencies can help companies to become more specialized and concentrate on delivering their primary services to customers. Examples of non-core activities can be human resource management for manufacturing companies or web design for sales organizations. The focus on core competences is one of the key drivers of outsourcing, as it allows companies to achieve its objectives without being an expert in all the disciplines required to make the company succeed. There are different types of outsourcing, in the current project

outsourcing is scoped to IT outsourcing. IT outsourcing (ITO) is the practice of transferring all or part of internal IT services to external provider.

IT outsourcing has become a popular intervention in the last two decades. The modern history of ITO starts in 1989 with the contract between Kodak and IBM when the former handed over control of its data centre operations to IBM (Lacity, M.C., & Willcocks, L.P. 2001). When Kodak turned over its IT operations to an outsourcing partner, outsourcing was a \$4 billion a year business (Loh, L., & Venkatraman, N. 1992). In 2011 worldwide ITO revenue generated nearly \$245 billion, according to the estimates of Gartner (Gartner 2012). The basic idea of the outsourcing is to contract non-core activities that were previously managed internally to an external party. Being specialized in this area, external providers can offer services with lower cost and higher quality. Reduction of operating cost is the primary reason for ITO ((Ang, S., & Straub, D. 1998); (Craig, D., & Willmott, P. 2005)). Lately, apart from lower costs that IT outsourcing can deliver, companies expect IT outsourcing to “transform IT functions into lean, dynamic groups that respond quickly to business needs and opportunities” (Lacity, M.C., & Willcocks, L.P. 2001) and to contribute to the business goals of the enterprise.

However, outsourcing part of the internal IT services to an external supplier significantly influences the complexity of alignment. Traditionally business-IT alignment is seen as an intra-organizational challenge, as the collaboration of two sides – IT and business teams. While IT outsourcing expands it to inter-organizational context which includes three concerned parties – business and IT teams within a company and a service vendor. As a result, alignment maturity is harder to achieve and manage. ITO encourages companies to reconsider their alignment strategy. Although, ITO has a lot of benefits for companies (such as cost reduction, focus on core activities, access to highly skilled professionals and others), it does not always help the business (Hefley, W.E., & Loesche, E.A. 2006). The history shows a number of disastrous failures of IT outsourcing ((Lacity, M.C., & Hirschheim, R. 1993); (Rochester, J., & Douglas, D. 1993)) when the company has no choice but terminate the contract with their service provider and either search for another provider or build an effective IT within their organization.

Maintaining alignment between technical and business functions is a very difficult task. A study by Pollalis (Pollalis 2003) shows that IT outsourcing affect performance positively. Also Thorogood et al. (Thorogood, A., Yetton, P., Vlastic, A., & Spiller, J. 2004) report that companies with low level of strategic alignment poorly take advantage of ITO. Nonetheless, some other authors are more critical in regards to BIA in outsourcing situation. For example, Lacity et al. (Lacity, M.C., Willcocks, L.P., & Feeny, D.F. 1995) state that IT outsourcing causes a decrease in alignment between IT and business strategy. These cases clearly show the importance of studying approaches to increase effectiveness of ITO in business context.

## 1.2 Research goal

Topics of BIA and ITO are studied broadly by academics and practitioners. Nevertheless, in the review of previous studies it was found that the combination of BIA and ITO is not extensively explored and in general poorly understood. However, IT outsourcing can significantly affect the stable relationship between business and IT. Therefore, it is important to assess the mutual interaction between BIA and ITO.

The present Thesis has two main research goals. The first goal is to design a model for assessment of business-IT alignment in organizations involved in IT outsourcing. The second goal is to validate the proposed model in the field with the real companies. The purpose of the empirical investigation is to formulate hypotheses which can be further tested with a larger number of cases. Apart from the generation of the hypotheses, the empirical study also targets to evaluate the understandability and applicability of the designed model in a practical environment.

Cloud computing (CC) has gained a lot of attention recently. It is often considered the most significant switch in the IT world since the advent of the Internet (Carr 2008). Cloud computing represents a new way to outsource IT resources (Hon, K., & Millard, C., 2012). However, there is very little real data available about CC in the context of IT outsourcing. Hence, the current research attempts to address how cloud computing, as a specific type of IT outsourcing, impacts the alignment problem between business and IT in companies. It must be noted that cloud computing is not the main subject of the present research and will not be deeply investigated.

The current study makes both scientific and practical contributions. A key scientific contribution is the proposition of a measurement mechanism of BIA in IT outsourcing situation. Another theoretical value lays in the thorough and structured literature analysis. Abundant literature is available on the topics of alignment and outsourcing, whereas the present thesis accumulates the knowledge and presents it in a compact and understandable way.

From the practical point, the findings and conclusions can be useful for business and IT managers to improve the BIA in ITO situations in their companies. These aspects have not been addressed in depth, and the impact (especially in the context of cloud computing) has not been properly studied before.

## 1.3 Research questions

To reach the primary goals of this project, several research questions are formulated in the line of the topic. Sub-questions help to answer main research questions and structure the work.

RQ1. What is the state of art in the field of BIA, ITO and their relationship?

- What are the definition of business-IT alignment, IT outsourcing and cloud computing?
- What is known about relationship between BIA and ITO?
- What is the state of knowledge about relationship between strategic alignment and cloud computing?

RQ2. How to evaluate maturity level of BIA in ITO context?

- What frameworks exist to evaluate business-IT alignment?
- What is the most suitable model for measuring business-IT alignment?
- What frameworks for measuring maturity level of ITO are available in the literature?
- What is the most suitable for the current research?
- What factors influence success of IT outsourcing activities?

RQ3. Based on the case study findings what hypothesis can be generated about the effect of IT outsourcing on the level of alignment maturity?

ITO is a significant intervention and likely has an effect on the level of alignment between business and IT. It is important to study how IT outsourcing impacts the alignment problem between business and IT. Also received data most likely can lead to the formulation of other hypothesis with respect to business-IT alignment and its dimensions, IT outsourcing, and its success factors.

## 1.4 Outline

This section describes the structure of the thesis. The report starts with the current introduction chapter that provides a rationale for the research project, formulates research goals and questions. Chapter two outlines the research approach and methodology. Chapter three presents the background theory and concepts, and defines an information gap in the literature. Chapter four contains the selection of the appropriate reference models for both business-IT alignment and IT outsourcing. Chapter five introduces the designed model and explains the measurement procedure. Chapter six explains the procedure of the empirical evaluation, presents the findings of the case study and the discussion of the results. Chapter seven discusses the conclusions, limitations and the important issues for future research.

# Chapter 2 Research methodology

After formulating research goals and questions it is necessary to develop research methodology which underpins all steps of the research. Chapter 2 introduces the research strategy and the techniques used to reach the formulated in the introduction research goals. This chapter describes the conducted research process, examines the research methods, and covers data collection techniques. Discussion of reliability and validity of the research concludes the chapter.

## 2.1 Research process

Steps of the research process consequentially answer formulated in the introduction research questions. They are recalled below.

RQ1. What is the state of art in the field of BIA, ITO and their relationship?

RQ2. How to evaluate maturity level of BIA in ITO context?

RQ3. Based on the case study findings what hypothesis can be generated about the effect of IT outsourcing on the level of alignment maturity?

Figure 1 outlines the research approach. Research is divided into four main parts:

- 1) literature review,
- 2) construction of the proposed model,
- 3) empirical investigation, and
- 4) analysis of the results.

The literature review stage is based on the extensive literature analysis. Literature review provides definitions for the notions of business-IT alignment, IT outsourcing and cloud computing. Literature study shows the reader what was previously explored by other researchers with regards to combination of BIA and ITO, as well as strategic alignment and cloud computing. The literature review determines the information gap which the current research can fill. Literature study helps to answer RQ1.

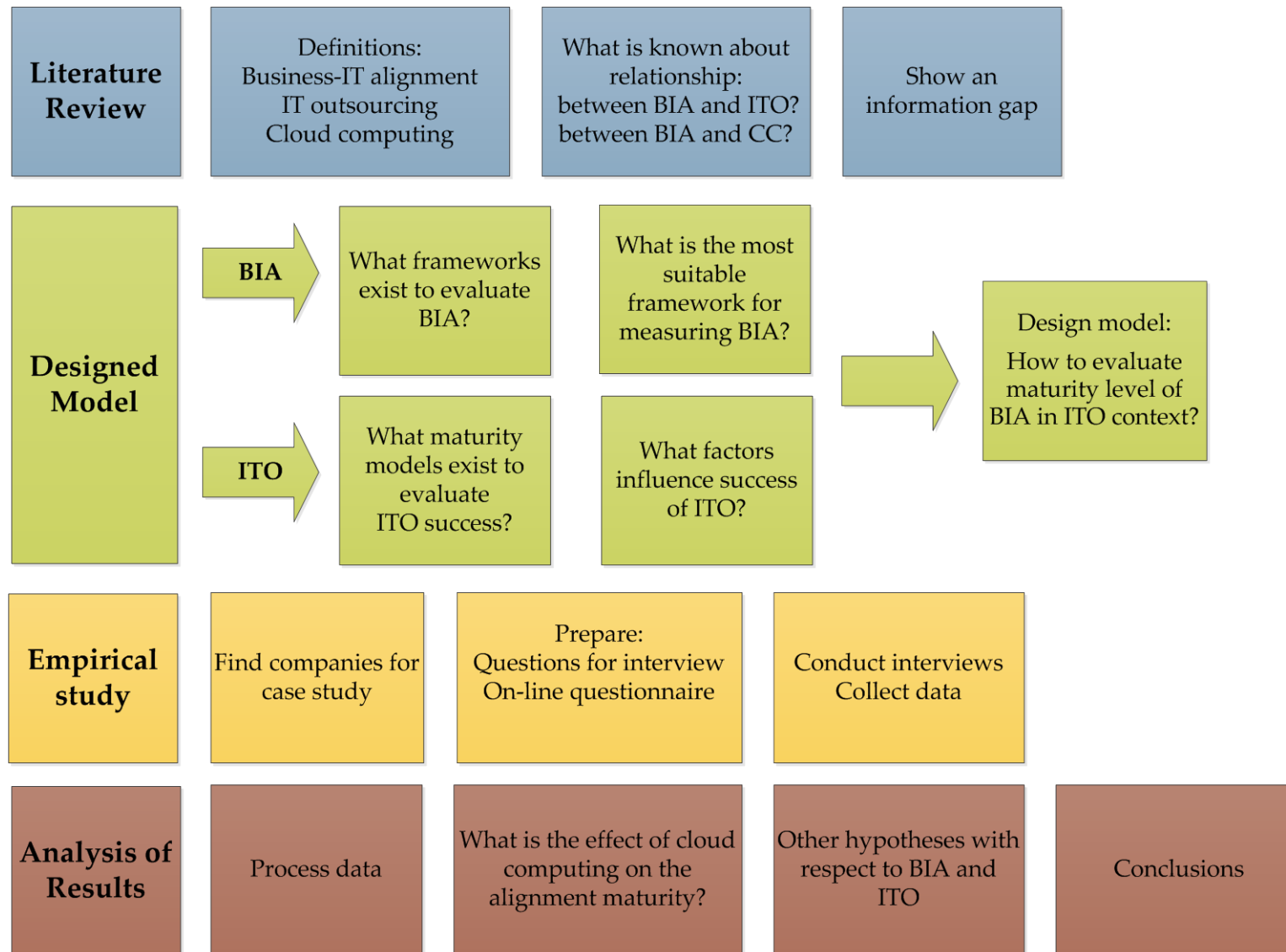


Figure 1. Research methodology



The second part involves the development of the model. As can be seen from Figure 1, construction of the model consists of three tasks: measurement of the BIA maturity level, assessment of the ITO maturity, and evaluation of the BIA maturity in the ITO context. The maturity model for measuring the BIA level is selected among several of the most popular and widely accepted frameworks. For determining level of ITO maturity, the tool is defined based on applicability of using it in a practical evaluation. The factors influencing success of ITO activities within an organization are identified through literature review and field experts' opinion. Based on the selected mechanisms, the model for evaluating BIA maturity in IT outsourcing situation is designed. This part provides answer to the RQ2.

In order to answer RQ3 and complete the main research goal of the thesis – investigate the impact of IT outsourcing on the BIA maturity level – the empirical study is conducted using the case study method. Besides formulating the core hypothesis on the relationships between ITO and internal business-IT alignment, the obtained results should suggest other hypotheses regarding business-IT alignment and its dimensions, as well as IT outsourcing and its factors.

The last and the most valuable part of the thesis suggest the analysis of the results. During this step, the information from interviews and questionnaires is analysed and the findings are presented.

## 2.2 Research method

Survey and case study are the most common scientific methods. Survey approach implies collecting data from a large number of organizations, and analysing this data with the help of statistical techniques. By studying a representative sample of organizations, the survey approach seeks to provide a statistical generalization about the object of study. Survey method is a very effective technique for verification of hypothesis, rather than discovery.

In comparison, case study approach collects data from a small number of organizations. It provides the opportunity to get deep insights in the organizational behaviour. A case study is a particularly suitable research method when a little known or poorly understood about the research phenomenon (Yin 2009), or a phenomenon is not well developed or not yet mature (Darke, P., Shanks, G., & Broadbent, M., 1998). This is clearly the case of the research goals addressed by the current project. The literature review detected lack of the research on the topic of the influence ITO activities on the internal strategic alignment.

Another argument for selecting case study approach states that a statistical generalization is *not* the goal of the present thesis, rather development of novel hypotheses for later testing with a large number of organizations. For this purpose case study results are useful in the preliminary stages of an investigation since it provides hypothesis, which may be tested

systematically with a larger number of cases ((Abercrombie, N., Hill, S., & Turner, B.S. 2006); (Cavaye 1996)).

Table 1 summarizes the differences of two methods. Based on the previously explained reasons, a case study approach is more suitable for the objectives of the current research. Kraemer (Kraemer 1991) identified that case study research is greatly improved when supported with other quantitative data. Hence, the current research adopts a case study approach accompanied with questionnaire data.

Table 1. Comparison of case study and survey methods

Case study	vs.	Survey
One / several companies		Large set of companies
Deep investigation		Statistical generalization
Formulation of hypotheses		Verification of hypotheses

Case study research may adopt single-case or multiple-case designs. A single case study is appropriate where it represents a critical or unique case (Yin 2009). Multiple-case designs allow cross-case analysis and comparison, also multiple-case design is preferable when the intent of the research is theory building. Therefore, the present research adopts multiple-case design. The multiple-case design is usually more difficult to implement than a single-case design, but the ensuing data can provide greater confidence in the findings in the way that multiple experiments strengthen experimental research findings ((Benbasat, I., Goldstein, D.K., & Mead, M. 1987); (Yin 2009)).

## 2.3 Data collection methods

Data collection is the vital part of the research. Several studies show that it is always best to utilize several methods of data collection to adequately address the impacts of relationships ((Kling 1991); (Gutek 1991); (Bikson 1991)). This research will consist of both secondary and primary research. As shown in Figure 1, the starting point of the research process is the revision of the available theory, after which the primary research can be designed. Therefore, the secondary research will be discussed first, followed by the primary research.

### 2.3.1 Secondary research

Secondary research refers to a re-examination of the data that has already been published. This is also known as a 'desk research'. Secondary research provides an overview of what has been researched before in the same subject area, and places the conducted research in a

context. For this thesis, the first part of the desk research is reflected in Chapter 3 (literature analysis). It evaluates the existing definitions of business-IT alignment, IT outsourcing and cloud computing; studies the available theories about the relationship between these concepts, and identifies an information gap that can be addressed in the present thesis. The second part of the desk research is presented in Chapter 4 and is used further for design of the model in Chapter 5.

### 2.3.2 Primary research

In the current thesis primary data has both qualitative and quantitative nature. The qualitative data is collected through semi-structured interviews. Interviews are one of the main techniques collecting data in case study research method. There are three types of interviews: structured, semi-structured and unstructured. Structured interviews are conducted in very standardized manner when each respondent is asked the same set of questions. Nature of semi-structured interviews is more flexible, giving possibilities to vary list of questions. Unstructured interview is characterized by asking different variants of questions to each respondent and can be interpreted as a free-flowing conversation.

Semi-structured interview method is preferred since it combines a set of pre-determined questions from one hand, while on the other hand it has flexible structure and provides with the opportunity to explore particular topics further. Semi-structured interviews give a freedom to discuss questions related to the topic which might be not prepared in advance. Data gathered from interviews will provide qualitative data for the research.

Interviews will be complemented with quantitative data from questionnaires. Questionnaire is used for measuring business-IT alignment maturity score and IT outsourcing maturity. For this purpose questionnaire is a suitable method because set of responses is limited and does not require discussion.

## 2.4 Reliability and validity

The quality of each research might be critically examined on its reliability and validity (Finn, 2000). Silverman (Silverman, 2006) suggests that validity and reliability are the two primary concepts in discussion of the credibility of a scientific research. This section discusses the concepts of reliability and validity, as well as explains the methods undertaken to ensure reliable and valid results.

### 2.4.1 Reliability

The reliability of the results is related to the consistency of the results over time and demonstration that results of a study can be reproduced under a similar methodology (Joppe, 2000). In other words, the research is reliable if other researcher obtains the same results utilizing the same methodology.

The reliability of the case study is assured by applying the same procedure on every case. All interviews were conducted in the same manner based on the beforehand designed guidelines. Application of the case study protocol increases the reliability and validity of the research. Yin (Yin, 2009) suggests that typical protocol should include the following steps: case study design, preparation for data collection, collecting evidence, analysing evidence and reporting case studies. This section partially covers description of these steps, while analysis of the collected data is explained in Chapter 6.

In order to increase the reliability of responses, respondents were assured that their answers and provided information will be treated strictly confidentially. Otherwise, the honesty of the responses could be harmed by the assumption that the answers will be viewed and checked by higher executives. This potentially could result in the failure to draw proper conclusions.

The instrument of the research, questionnaire, should be tested on reliability as well. First of all, the questions might not be ambiguous or difficult to understand. In order to ensure these qualities, the questionnaire was emailed to the supervisors and other experts. Pre-testing by the panel of expert helped to establish the reliability and validity of the questionnaire (Creswell, 2009). Further, to make questions clear and easy to answer the certain concepts were explained with additional description. For instance, dimensions of the alignment model were explained to ensure that there is no mistake in an interpretation. Though each attribute has its own five point scale of maturity levels, in some cases it could be difficult to understand the real meaning behind the name. This can result in the wrong interpretation and undermine the results. Therefore, in the instructions it was mentioned that a respondent can follow the general scale for all attributes, where “one” means that the attribute does not fit the organization, and “five” describes strong level of fit throughout the organization. The possibility of misinterpreting is further reduced by availability of an interviewer who could provide additional comments if necessary.

In order the entire research to be reliable, not only the empirical investigation but also the theoretical model should have a high quality. If the designed model or instrument is not clearly described then the results can vary considerably, depending on the interpretation. The reliability of the proposed model is assured by the deep literature analysis, clear and explicit description of how the phenomenon under investigation is measured.

## 2.4.2 Validity

Validity is the extent to which findings of the research are true and accurate. Validity of the theoretical part (steps one and two of the research process in Figure 1) is assured by applying a systematic literature review protocol (Kitchenham, 2004). A structured, properly documented and protocol-driven approach to search and manage the literature sources demonstrates objectivity of the resulting review. Additionally, validity of the theoretical part is increased by the review and feedback the thesis supervisors.

Validity of the empirical validation part is broken down into validity of case study and validity of questionnaire. There are several types of validity: external validity, internal validity and construct validity.

External validity of a case study is related to the extent to which the findings can be generalized. Case study research is criticised on the grounds that its findings are not generalizable. However, case study findings do not seek for the statistical generalization; however they can be generalized through analytic generalization (Yin, 2009). The results of analytic generalizations are not likely to achieve the status of the incontestable conclusion but can lead to formulating hypotheses about the phenomenon.

Internal validity of a case study defines to what degree the studies' results express the reality (Winter, 2000). Internal validity of the empirical evaluation is assured by the fact that data was collected from managers and executives. These people are the most familiar with the situation within the company and most knowledgeable in providing the correct answers for the interview questions and questionnaire.

Validity of the questionnaire refers to the fact whether the questionnaire measures what it intended to measure (Bryman, A., & Cramer, D., 1997). In other words, the data gathering should match the decisions that the research aims to make. The objective of the current thesis is to draw conclusions about the correlation between internal organizational alignment and success of IT outsourcing activities. Hence, questionnaire should measure two values – maturity of BIA and maturity of ITO. The questionnaire is constructed in the way to provide these values for the research purposes. Content validity of the questionnaire is determined by the extent to which the domain is adequately covered. The designed questionnaire covers all dimensions of the alignment as well as factors of ITO.

# Chapter 3 Literature analysis

Literature analysis enables to situate this project in the context of the previous studies and familiarize the reader with the major definitions and concepts. This chapter examines the available research on business-IT alignment in the context of IT outsourcing, and relationship with cloud computing.

For reasons of space, this chapter presents only the most important findings, while the full version of the literature review can be found in Appendix A. Full version presents extra information that could be interesting for a reader. For example, review methodology and literature sources are explained there.

## 3.1 Underlying definitions

This section defines the concepts of business-IT alignment, IT outsourcing and cloud computing.

In the last decades the topic of business-IT alignment has attracted much attention from researchers and practitioners. Consequently, multiple definitions can be found in literature. Multiple definitions and their analysis are presented in the detailed literature review in Appendix A.

This research will use the definition suggested by (Maes, R., Rijsenbrij, D., Truijens, O., & Goedvolk, H. 2000). Business-IT alignment is defined by (Maes, R., Rijsenbrij, D., Truijens, O., & Goedvolk, H. 2000) as «the continuous process, involving management and design sub-processes, of consciously and coherently interrelating all components of the business – IT relationship in order to contribute to the organisation's performance over time». It is the most elaborated one and covers all important aspects: it shows that alignment is not a static state but has a dynamic nature; does not restrict alignment to strategic point but include operational view; lacks of ambiguous words as harmony, balance, etc.; includes not only managerial processes but design processes as well. Therefore, this definition is used in the present Master Thesis for describing BIA concept.

Outsourcing can be generally defined as contracting previously internal services under contract to external supplier. Several definitions of outsourcing were examined (for details see Appendix A). It was revealed that though these definitions are slightly different but they share the same idea that outsourcing involves a long-term contractual relationship with

transferring internal services to an external provider. For the purposes of our research *outsourcing* will be interpreted by the definition of (McCarthy, I. & Anagnostou, A. 2004).

(McCarthy, I. & Anagnostou, A. 2004) writes that «outsourcing not only consists of purchasing products or services from external sources, but also transfers the responsibility for business functions and often the associated knowledge to the external organization». This definition explicitly shows that outsourcing activity is much more than simple relocating in-house services to external vendor. Besides, it relates ITO to alignment context by stating that company transfers also business functions to third party which can significantly affect alignment in the organization. As a result, alignment maturity is harder to achieve and manage. This definition also draws attention to the potential risks associated with knowledge transfer.

Outsourcing can be classified in three categories: Business Process Outsourcing (BPO), Knowledge Process Outsourcing (KPO) and Information Technology Outsourcing (ITO). The current study focuses on the IT outsourcing. ITO is the use of external service providers to effectively deliver IT-enabled business processes. Benefits and risks of IT outsourcing are extensively elaborated in Appendix A.

Cloud computing services can be viewed as a form of IT outsourcing (Hon, K., & Millard, C., 2012). Increasing importance of information technologies for business inspired development of new approaches for effective and efficient IT provisioning. In this regard, cloud computing is widely recognized as the most promising computing paradigm of nowadays (Buyya, R., Yeo, C. S., & Venugopal, S. 2008).

This thesis adopts the generally accepted definition of cloud computing from the National Institute of Standards and Technology (Mell, P., & Grance, T. 2009). According to NIST, cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. More information with respect to cloud computing service and deployment models can be found in Appendix A.

## 3.2 Relationship between BIA and ITO

Topics of BIA and ITO are widely studied by scientists and practitioners. However, to the author's best knowledge, relatively few publications address the subject of the relationship between these two concepts. This section critically discusses available literature studying impact of IT outsourcing decision on alignment.

Cumps et al. (Cumps, B., Viaene, S., Dedene, G., & Vandenbulcke, J. 2006) conducted a comparative theoretical study with two imaginary scenarios in order to examine the likely

impact of outsourcing on business-IT alignment. In the first exercise, only a small part of information and communications technologies (ICT) is outsourced, therefore, the company maintains control over the ICT strategy. In the second scenario, the whole ICT is sourced to external provider; consequently the company loses control over IT services and relies entirely on the supplier organization. The result of this paper is a theoretical proposition that in organisations where ICT is of high strategic importance and generates a relevant competitive advantage, outsourcing will lead to both more formal and informal alignment structures and processes between the client and the supplier organization. However, the authors stand that the paper has only a theoretical proposition which needs to be tested and backed with empirical data.

A comparative study of Dutta (Dutta 1996) focuses on two banks with diametrically opposite strategies of aligning IT with business. The Bank A manages IT in-house, while Bank B completely outsourced all of its IT functions. In summary, the authors claim that physically IT can be outsourced, but it is not possible to outsource the management of IT. Different organizations may choose different mechanisms for aligning IT with the business, but all of them will require the active participation and involvement of the business management. The key limitation of this publication is that the research does not have any empirical evidence, being based completely on the authors' investigations and observations of the situation.

The results of the described above studies cannot be generalized and applied on default. First of all, it is hard to draw conclusions and establish the tendency if only two (imaginary) studies are considered. Secondly, these researches are not supported by empirical data appearing to be a theoretical proposition instead of complete and extensible scientific research.

Research of Pollalis (Pollalis 2003) derived data from 127 global commercial banks. The results show that outsourcing affects performance positively as long as the implementation of IT is consistent with the needs of business. Also, findings imply that banks with low level of strategic alignment poorly contribute from ITO, whereas banks with high business-IT alignment can acquire value from ITO. This research appears to be related to the topic of the present literature review and goals of the Master Thesis, it is based on both quantitative (survey measures) and anecdotal (case studies and interviews) data. The major drawback of the research is that authors describe neither the methodology of the research nor the undertaken survey, therefore it is impossible to repeat their experiment and justify derived results.

Gilin (Gilin 2009) investigates in his Master Thesis the current and preferred level of business-IT alignment in an outsourcing situation. The author proposes the measurement instrument that enables organizations to evaluate their outsourcing relationship with their vendor. This instrument is based on the strategic alignment maturity model of Luftman



(2000), without considering IT outsourcing component. The main limitation is that the research focuses on two out of six factors of the Luftman's model, namely Partnership and Governance. Results of the empirical data indicate that the current maturity level of the two factors in companies is lower than preferred.

The paper of (van Lier, J., & Dohmen, T. 2007) studies the influence of strategic alignment and benefit management on IT outsourcing success. For evaluation maturity of alignment the authors have used Luftman's alignment maturity model, while slightly modified the approach – instead of involving IT and business unit executives in determination of strategic alignment level they asked an external observer to fill the questionnaire justifying this with the fact that internal observer has fresh and clear vision of the situation. However, in my opinion, in order to determine level of strategic alignment the individual should have in-depth knowledge and clear understanding about situation in the company and its processes. Also, some questions in the survey are very specific and require a thorough insight in company activities, such as define level of budgetary control and degree of shared goals with partners. Benefits management is assessed in terms of 18 statements formulated by authors “since no such framework is available in the literature”. The authors use a case study approach. The data of case studies indicate that organizations with a higher level of strategic alignment and a higher level of benefits management reported more IT outsourcing success in terms of benefits achievement.

Derksen (Derksen 2013) studied the impact of ITO on the alignment level in his PhD thesis. His work raises the same questions as in the current project and appears to be the most relevant one. The author did not find any significant impact and concludes that IT outsourcing has small yet positive contribution. The reason of not finding any prominent correlation could possibly be in the selection of an unsuitable research method. He applied survey method for validation his hypothesis and processed results of 273 companies. However, survey method has a considerable drawback that results can be biased by external factors, such as size of company, role of respondent or geographical location. These factors were not monitored whereas can greatly influence results of survey. For the purposes of the current research case study approach is adapted. The justification of the selected method is provided in Section 2.2.

Analysis of several less relevant studies can be found in the Appendix A.

After studying available sources on the topic of BIA and ITO relationship, it could be seen that most of the authors discontinue their research on theoretical propositions leaving the validation part of those for future research. However, empirical evidence and validation is a significant part of a scientific research cycle. Additionally, both topics of BIA and ITO are closely related to practice and industries, so they have to be seen not only from theoretical perspective but also linked to practical data.

Another point for critique is that all studies, except the works of (van Lier, J., & Dohmen, T. 2007) and (Derksen 2013), do not use any scientifically proven models for business-IT alignment, in spite of the fact that many of them exist for years and used by scholars (see examples in Section 4.2). Further, presented studies do not propose any practical model or measurement tool that can be used in the real-life conditions for evaluating impact of IT outsourcing on BIA in organizations. Managers operate with numbers; this language is understandable for them and gives directions for further managerial decisions. Only Derksen designed model for measuring the influence of IT outsourcing activities on level of alignment within the organization. He applies strategic alignment maturity model of Luftman and derives set of characteristics impacting ITO relationships.

Current review of the available literature highlights the incompleteness of the research about the topic related to the impact IT outsourcing to strategic alignment, suggesting possibilities for discussion and future research.

### 3.3 Relationship between alignment and cloud computing

Rapid development of information technologies encourages emerging of new paradigms, such as cloud computing. New technologies have a significant impact on the business-IT alignment. Hence, shifting to cloud computing requires re-alignment of business and IT strategies. To date, the research of alignment in cloud computing environment still remains poor. It could be explained by a fast pace that cloud computing has been involving nowadays. New technologies and business models has grown so fast that leave the academic research behind the real business development.

(Li, Q., Wang, C., Wu, J., Li, J., & Wang, Z. 2011) reported that cloud computing provided opportunities for strategic development. Authors examine how cloud environment impacts four dimensions of strategic alignment model (Henderson, J.C., & Venkatraman, N. 1993), namely business strategy, IT strategy, business processes and IT/IS implementation. The paper presents theoretical model of collaboration between internal processes of organization with business processes of cloud providers. The model is based on the notions of collaboration points and agents.

Martson et al. (Marston, S., Li, Z., Bandyopadhyay, S., Zhang, J., & Ghalsasi, A. 2011) study cloud computing from the business perspective. They evaluate strategic dimensions of CC in the form of SWOT framework, discovering strengths, weaknesses, opportunities and threats of cloud computing environment. Also the paper discovers various stakeholders in the CC relationships. This paper is merely theoretical and does not answer the question how to align cloud computing and business goals.

Governance and alignment are closely related terms. IT governance consists of the leadership and organizational structures and processes that ensure that the organisation's IT sustains and extends the organisation's strategy and objectives (Van Grembergen 2002). Literature about cloud governance is also examined to make a complete picture. After reviewing the available literature the conclusion is that a lot of research refers to the technical aspects of cloud governance, and policies that should address them, while understanding the business-related issues surrounding cloud computing is scarce.

(Copie, A., Fortis, T., Munteanu, V. I., & Negru, V. 2013) reviewed a set of cloud governance components. Security, privacy and service management policies should be governed properly to ensure smooth migration to cloud environments. (Zhang, Q., Cheng, L., & Boutaba, R. 2010) identified the most challenging aspects of cloud computing. Cloud governance policy might include automated service provisioning, data security, software frameworks, storage technologies and data management. Salehi and Buyya (Salehi, M. A., & Buyya, R. 2010) introduce two scheduling algorithms that take into account user constraints such as time and budget. In this way they consider business objectives of time and cost minimization. The idea is that cloud providers offer resources to clients in exchange of a fee. Therefore, scheduling policies are required that consider resources' prices as well as user's available budget and deadline.

As it can be seen, these papers stress cloud technology itself, although they do not clear up the matter of relationship between cloud computing and business-IT alignment.

Another governance model for cloud computing is proposed by (Guo, Z., Song, M., & Song, J. 2010). This model is based on requirements that underline the need for policies and process management. Cloud-based governance model indicates a path that will guide the enterprise into achieving cloud advantages in a controlled and secure manner.

Cloud computing is an evolution of service-oriented architecture (SOA) (Guo, Z., Song, M., & Song, J. 2010). Hence, with due diligence what is learned about SOA governance can be applied to cloud computing. SOA is defined as "a framework for integrating business processes and supporting IT infrastructure as secure, standardized components-service- that can be reused and combined to address changing business priorities" (Bieberstein 2006). After reviewing literature that ties SOA and governance, it can be noted that the papers propose frameworks and models for integrating the SOA paradigm and business-IT alignment. However, they are mostly not supported by practical evidence and serve more as guidelines for managers. Also, in reviewed studies alignment is seen a three-dimensional construct of architecture, communication and governance, instead of being considered at the strategic level.

(Chen 2008) argues that transition to service-oriented architecture improves business-IT alignment in the way that SOA initiatives impact on all three dimensions. The authors develop Service Engineering Schematic which helps managers better understand the

mechanisms and processes for service system engineering in a cost-effective manner. No validation of the model is found. (Mohammad, A., Dominic, P., & Durai, D. 2010) develop a model which explains the interconnections between governance-communication-architecture, and enterprise agility. The model is validated by the survey. Results show that alignments via governance, via communication, and via architecture enabled by SOA are good predictors for enterprise agility.

Papers on a topic of SOA and governance propose frameworks and models, which can serve as guidelines for companies. However, they do not study causal relationship between SOA and its impact of governance. They simply say that SOA needs to be managed for better efficiency.

In conclusion, literature review on the question of impact cloud computing on business-IT alignment did not find any explanations of this relationship. Examined papers elaborate either technical details of CC paradigm or focus on the theoretical reflection. The latter shows that moving into the cloud considerably can reduce operational costs and make IT implementation faster. Theoretically, alignment can contribute from achieving these advantages. However, no explicit discussion exists whether transferring services in the cloud strengthen strategic alignment or it becomes harder to achieve. It is attempted to fill this research gap in the present work; in any case the determined research gap suggests directions for future research.

### 3.4 Concluding remarks

The results of the literature review point for direction of future research. The current review shows the lack of deep exploration of the relationship between BIA and IT outsourcing. That area of research is very promising since IT does not represent a core business in the most of the companies and they take decision to outsource IT operations. It can be valuable to gain insights of the behaviour of business-IT alignment in IT outsourcing situation. The future research should aim to make relationship deeper and clearer with the strict and scientific method. Secondly, no specific measurement mechanism for evaluating effect of IT outsourcing on BIA was found in the literature research. From the practical perspective, a model for measuring BIA in IT outsourcing environment could make a significant contribution for realizing benefits of subcontracting or conversely returning activities in-house. Such information can provide insights on what activities are most suitable to outsource and which activities better keep in the organization. As a part of scientific work, validation of findings with empirical data could be of great help for practitioners. The limitations of the previous studies let realize future directions for exploration and make a step a forward in a research.

# Chapter 4 Reference models

The previous chapter presented a review of a secondary literature which is relevant to the topic under investigation. This chapter seeks to find the proper mechanism among the existing frameworks of business-IT alignment and IT outsourcing. This mechanism will be further adopted to design a model for measuring business-IT alignment in an IT outsourcing situation. First part of the chapter deals with business-IT alignment frameworks and selection the one most appropriate for the current study. Second part covers the IT outsourcing concept, describes IT outsourcing maturity models and factors that influence ITO success.

## 4.1 Business-IT alignment models

Many empirical researches have proved that BIA positively impact the business performance (e.g., (McAdam, R., & Bailie, B. 2002); (Kearns, G. S., & Sabherwal, R. 2006)). Misalignment may lead to poor performance in business and increasing inefficiency in operations (Pongatichat, P., & Johnston, R. 2008).

Literature suggests different approaches of measuring alignment. Some authors propose to use frameworks, while the others suggest evaluating alignment based on metrics. After reviewing studies with metrics approach ((Aversano, L., Grasso, C., & Tortorella, M. 2013); (Aversano, L., Grasso, C., & Tortorella, M. 2010); (Amer, M., & Gómez, J. M. n.d.)), it can be concluded that all of them operate at the functional level, considering alignment between business and software systems. (Aversano, L., Grasso, C., & Tortorella, M. 2013) introduced quantitative measures such as technological coverage and technological adequacy that can demonstrate level of alignment between business process and related system. However, in the current thesis a premise is that business-IT alignment is understood more at the strategic level than the operational level.

However, strategic alignment is more than alignment with software systems. Nowadays IT is no longer represented by only software and information systems, but it is also a strategic component, enabler of internal efficiencies and competitive advantages. The definition of (Maes, R., Rijsenbrij, D., Truijens, O., & Goedvolk, H. 2000) has been selected as a guiding definition for this research. It states that alignment should take into account “interrelating all

components of the business – IT relationship”, such as enterprise goals, strategic plans, business processes, technology, information systems and IT strategy.

Frameworks are the traditional approach of measuring strategic alignment and include different aspects of inter-relations between business and IT. Therefore, frameworks approach is preferred over the metrics technique.

The most frequently cited business-IT alignment frameworks are shortly introduced in Appendix B, while the process of selecting one of the frameworks for measuring BIA in organizations is presented below.

## 4.2 Selection the BIA measurement model

This section provides the comparative analysis of the discussed frameworks, and results in the selection of the reference model.

In the form of intermediate chapter summary, the overview of the alignment models is presented in Table 2.

Table 2. Overview of alignment frameworks

<b>Model</b>	<b>SAM</b>	<b>Luftman</b>	<b>RBM</b>	<b>SCAM</b>
<b>Criterion</b>				
Authors	Henderson & Venkatraman	Luftman	Reich & Benbasat	Sabherwal & Chan
Research approach	Theory	Survey	Case study	Survey
Number of dimensions	4	6	2	2
# of citations of Google Scholar	2739	601	925	208
Usability	Theory and practice	Practice	Theory	Theory and practice

Mekawy et al. (Mekawy, M., Rusu, L., & Ahmed, N. 2009) developed an alignment model's evaluation framework. Authors presented a structured and comprehensive comparison of the business-IT alignment frameworks within 23 criteria, including conceptual completeness, flexibility, complexity, empirical applicability and effectiveness. As a conclusion, authors claim that Luftman's SAM model is the most established and most comprehensive model of alignment. However, the exclusion of other frameworks should be further justified.

A comparative analysis of the described business-IT alignment frameworks can be found in Appendix C.

Luftman says in his book there is “no silver bullet available” meaning that none of the models can solve all possible objectives (Luftman, J., & Kempaiah, R. 2007). Thus it is important to select the most appropriate model for the particular research. The current review builds a theoretical background for this Master Thesis. Therefore, alignment framework should meet the purposes of the master project. In this context the most important aspect is the measurability of the business-IT alignment in the organizations. Consequently, the model, which is the most suitable for measuring BIA, will be selected from the BIA frameworks described above.

First, the model of Reich and Benbasat is excluded from the evaluation. The first reason is that the RBM model does not completely cover the full concept of business-IT alignment. It considers alignment within only two factors (social and intellectual) and has too narrow scope for assessing BIA in companies.

According to Reich and Benbasat, four constructs affect the social dimension of business-IT alignment. However, it can be noticed that “communication between business and IT executives” is covered in the *Communication* criterion of Luftman’s model in two attributes “Understanding of business by IT” and “Understanding of IT by business”. The second construct “Connection between business and IT planning” is reflected in the “Role of IT in strategic business planning” attribute of *Partnership* criterion. “Shared domain knowledge between business and IT executives” has exactly the same meaning as “Knowledge sharing” in *Communication* criterion.

SAM
Luftman
RBM
SCAM

Additionally, RBM model focuses more on social and behavioural dimensions influencing alignment, rather than measures alignment level within the organization. Another reason of exclusion is that no evidence of applying this model in practice is found in the literature.

Model of Sabherwal and Chan focuses on general aspects of business and IT domains without deep investigation of other dimensions. Based on the results of (Mekawy, M., Rusu, L., & Ahmed, N., 2009) SCAM model is applicable only to the small and medium size organizations. This consideration can limit the search of companies for an empirical validation. This makes SCAM not suitable as the reference framework in this research.

SAM
Luftman
SCAM

Therefore, only SAM and Luftman’s model pass to the following selection stage. Strategic alignment model of Henderson and Venkatraman (SAM) is a comprehensively designed model because it differentiates between domains and sub-domains from both business and IT sides (twelve well defined components in four domains). This framework is a foundation for a vast number of studies, and some authors take it as a basis for construction their own frameworks. The examples of these models are Integrated Architecture Framework of (Goedvolk, H., Schijndel, A. van, Swede, V. van, & Tolido, R. 1997) and Unified framework of (Maes, R., Rijsenbrij, D., Truijens, O., & Goedvolk, H. 2000).

However, SAM has several weak points that make it not appropriate for this work. This model stands on the conceptual level without giving practical instrument in the hands of managers. It provides abstract view on alignment and it does not suggest any guidelines or best practices to assess the strategic alignment. Scheper (Scheper 2002) criticized Henderson and Venkatraman's strategic alignment model for not being operationalized. He argues that this model is not clearly defined and not useful for empirical research.

SAM

Luftman

Luftman's model is the last framework presented in the evaluation. Its underlying principle lays the assessment of the maturity level of business-IT alignment within 38 attributes of six alignment domains. Luftman provides a practical instrument which uses five levels of BIA maturity. The attributes have extended descriptions and measurability of the five levels is clearly defined. Scientists vastly use this model for their research (e.g., (Khanfar, M., & Zualkernan, I. A. 2010), (Ekstedt, M., Jonsson, N., Plazaola, L., Silva Molina, E. J., & Vargas, N. 2005)). These considerations make Luftman's framework the best suitable for the present research.

In conclusion, all presented models, except Luftman's model, are fairly unclear considering practical view on measuring alignment. For managers and executives the presence of measurement tool is a crucial factor of applying model in the company. It could be explained by the need of drawing some practical conclusions regarding the effectiveness of undertaken strategy which is not possible without measuring alignment.

The present section provides comprehensive evaluation of BIA frameworks and, through competitive analysis, Luftman's framework has been selected as the most valid and basic foundation of this research to evaluate the maturity level of BIA in organizations.

### 4.3 IT outsourcing maturity models

After choosing the reference model for business-IT alignment, the next step is to define appropriate mechanism for determination of IT outsourcing maturity level.

Primarily criteria which are important for the reference model might be identified. The model will be used for assessing IT outsourcing success in the real companies; therefore the applicability of a model in practical environment should be confirmed by the literature. The adaptability of a model should not be limited to a specific size of an organization; otherwise it could create encumbrance to the fieldwork. The same applies to the difficulty of usage the model. If the model is too complicated it requires costly consultancy services of experts, which could be a barrier for adaptation of the model in small and medium firms.

Several models of measuring maturity level of ITO relationships are proposed in the literature. Their description can be found in Appendix D, the next step is to choose the



model which is the most suitable for the purposes of the current thesis, and will serve as the reference model for the further research.

## 4.4 Selection the ITO reference model

Comparative analysis of the ITO models in the table form can be found in Appendix E. The procedure of the model selection is explained below.

First, a multisourcing maturity model is applicable only for large companies with federal IT organization (Herz, T. P., Hamel, F., Uebernickel, F., & Brenner, W. 2011). For that reason it is considered to be a very specific model for this research, it can negatively narrow the set of companies and harmfully influence the time-constraints of the present study. This model is not suitable as a reference model for the examination of the ITO maturity level.

Further, outsourcing management maturity model of Fairchild cannot be used as a reference model as far as it lacks metrics to measure the maturity level properly and additionally does not have any practical evidence in the scientific studies (Fairchild, 2004).

eSCM measurement model provides best practices for client for managing ITO relationships, as well as for supplier for providing IT outsourcing relationships. Likely, information from both parties of contractual relationships would provide more sound and comprehensive understanding of the nature of the relationships. Nevertheless, eSCM model is not used as a tool for measuring maturity in this research based on the several practical reasons. First of all, set of the companies participating in the research will be very limited as far as both supplier and customer of ITO should be willing to participate in the research. This entails the time-consuming nature of applying eSCM model. Second reason is that its complexity and the large amount of identified capability areas can create confusion. Not all business people can find time in their schedules to complete this assessment.

The big advantage of a Gottschalk and Solli-Saether maturity model is that it provides a practical instrument to identify current level of ITO maturity. The model proposes eleven benchmarks which help to determine current level of ITO relationships. However, it has two critical drawbacks which make this model not applicable for this research. First, in the subsequent exploratory study aimed to validate this maturity model, Gottschalk and Solli-Saether (Solli-Saether, H., & Gottschalk, P. 2008) found that the set of benchmarks was not successful – only three out of eleven benchmarks found support in their empirical study. They state that future research should carefully evaluate the stage model and set of benchmarks. Secondly, proposed benchmarks are partially covered in the Partnership criterion of the Luftman's model (see Appendix B).

Based on the arguments, none of the ITO maturity models is suitable for the purposes of the current research. Therefore, for defining maturity level of IT outsourcing within

organizations the new approach should be established. The proposition is to derive set of important characteristics, or factors, that influence success of ITO activities. Collectively, evaluation these factors in IT outsourcing initiatives will determine the ITO maturity.

## 4.5 IT outsourcing factors

The objective of this section is to identify and analyse characteristics, or factors, that are important to be managed within the organization in order to reach high maturity in IT outsourcing activities. The claim is that managers might consider and manage the derived set of factors in order to achieve the success of IT outsourcing initiatives. This part of the thesis is based on the literature research and field discussion with experts. The resulting characteristics are intended to support practical validation step in respect of being formulated as questions and evaluated by the approached managers.

There is an abundant discussion among computer scientists and business managers about critical success factors which underpin effective management of IT outsourcing. A search through the IT outsourcing literature identified a number of studies concerned with success factors in IT outsourcing. Table 3 shows the factors identified in each study. Many studies are consistent and harmonious in their findings. They have a lot of factors in common, sometimes with slightly different names. For instance, (Gonzalez, R., Gasco, J., & Llopis, J., 2005) argue the importance of “choosing the right provider”, while (Hanna, R., & Daim, T., 2007) names it “vendor selection” meaning the same.

Selected studies have passed through thorough examination. For the purpose of the examination all factors with the same or similar meaning were grouped together. For instance, “communication client / vendor” and “attention to the clients specific problems” factors were grouped together with a name *Relationship mgt.* Another example is that “monitoring and control”, “involvement of top-level management” and “continuous improvement” factors are arranged under *Governance* factor. Table 3 captures the correspondence between each factor from studies and the new interpretation.

Table 3. Selected ITO studies and relevant criteria

Reference	Success factors	Label
[1] (Beaumont, N., & Sohal, A, 2004)	<ul style="list-style-type: none"> <li>– Shared goals</li> <li>– Good contract management</li> <li>– Use Service Level Agreements</li> <li>– Performance management</li> </ul>	<ul style="list-style-type: none"> <li>– Relationship mgt.</li> <li>– Contract mgt.</li> <li>– Contract mgt. / Performance mgt.</li> <li>– Performance mgt.</li> </ul>

Table 3. Selected ITO studies and relevant criteria (cont.)

Reference	Success factors	Label
[2] (Gonzalez, R., Gasco, J., & Llopis, J., 2005)	<ul style="list-style-type: none"> <li>- Provider's understanding of clients' objectives</li> <li>- Choosing the right provider</li> <li>- A clear idea of what is sought through outsourcing</li> <li>- Provider's attention to clients' specific problems</li> <li>- Frequent client-provider contacts</li> <li>- A good-value-for-money relationship</li> <li>- Top management's support and involvement</li> <li>- Proper contract structuring</li> </ul>	<ul style="list-style-type: none"> <li>- Relationship mgt.</li> <li>- Preparation</li> <li>- Outsourcing strategy</li> <li>- Relationship mgt.</li> <li>- Relationship mgt.</li> <li>- Performance mgt.</li> <li>- Governance</li> <li>- Contract mgt.</li> </ul>
[3] (Claver, E., González, R., Gascó, J., & Llopis, J., 2002)	<ul style="list-style-type: none"> <li>- The provider must understand the client's objectives</li> <li>- Top management support and involvement</li> <li>- Choosing the right provider</li> <li>- Frequency of client-provider contacts</li> <li>- Attention to the clients specific problems</li> <li>- To make a proper drawn-up contract</li> <li>- Goal of outsourcing</li> <li>- A good value for money relationship</li> </ul>	<ul style="list-style-type: none"> <li>- Relationship mgt.</li> <li>- Governance</li> <li>- Preparation</li> <li>- Relationship mgt.</li> <li>- Relationship mgt.</li> <li>- Contract mgt.</li> <li>- Outsourcing strategy</li> <li>- Performance mgt.</li> </ul>
[4] (Gottschalk, P., & Solli-Saether, H., 2005)	<ul style="list-style-type: none"> <li>- Core competence management</li> <li>- Transaction cost reduction</li> <li>- Contract completeness</li> <li>- Production cost reduction</li> <li>- Alliance exploitation</li> <li>- Relationship exploitation</li> <li>- Vendor behavior control</li> <li>- Demarcation of labor</li> <li>- Stakeholder management</li> </ul>	<ul style="list-style-type: none"> <li>- Outsourcing strategy</li> <li>- Performance mgt.</li> <li>- Contract mgt.</li> <li>- Performance mgt.</li> <li>- Preparation</li> <li>- Relationship mgt.</li> <li>- Relationship mgt.</li> <li>- Relationship mgt.</li> <li>- Governance</li> </ul>
[5] (Ishizaka, A., & Blakiston, R., 2012)	<ul style="list-style-type: none"> <li>- Commitment from top management</li> <li>- Clear aims and objectives</li> <li>- Confidence in the knowledge of service provider</li> <li>- Capability to conduct and control</li> <li>- Change management</li> </ul>	<ul style="list-style-type: none"> <li>- Governance</li> <li>- Outsourcing strategy</li> <li>- Preparation</li> <li>- Governance</li> <li>- Change mgt.</li> </ul>

Table 3. Selected ITO studies and relevant criteria (cont.)

Reference	Success factors	Label
	<ul style="list-style-type: none"> <li>– Continuity and succession planning</li> <li>– Knowledge sharing</li> <li>– Contract scale</li> <li>– Contract flexibility</li> <li>– Cultural fit (client / provider)</li> </ul>	<ul style="list-style-type: none"> <li>– Governance</li> <li>– Knowledge mgt.</li> <li>– Contract mgt.</li> <li>– Contract mgt.</li> <li>– Relationship mgt.</li> </ul>
[6] (Hanna, R., & Daim, T., 2007)	<ul style="list-style-type: none"> <li>– Communication</li> <li>– Knowledge transferring</li> <li>– Risk management</li> <li>– Contract management</li> <li>– Vendor selection</li> <li>– Involvement of top-level mgt.</li> </ul>	<ul style="list-style-type: none"> <li>– Relationship mgt.</li> <li>– Knowledge mgt.</li> <li>– Risk mgt.</li> <li>– Contract mgt.</li> <li>– Preparation</li> <li>– Governance</li> </ul>
[7] (Smuts, H., van der Merwe, A., Kotzé, P., & Loock, M., 2010)	<ul style="list-style-type: none"> <li>– Delivery performance</li> <li>– Good contract management</li> <li>– Strong relationships</li> <li>– Understand the customer</li> <li>– Use service level agreements</li>   <li>– Maintain control</li> <li>– Be flexible</li> <li>– Communicate</li> <li>– Technical expertise</li> <li>– Integrate the services</li> </ul>	<ul style="list-style-type: none"> <li>– Performance mgt.</li> <li>– Contract mgt.</li> <li>– Relationship mgt.</li> <li>– Relationship mgt.</li> <li>– Contract mgt. / Performance mgt.</li> <li>– Governance</li> <li>– Relationship mgt.</li> <li>– Relationship mgt.</li> <li>– Preparation</li> <li>– Relationship mgt.</li> </ul>
[8] (Cullen, S., & Willcocks, L., 2003)	<ul style="list-style-type: none"> <li>– Select vendor</li> <li>– Prepare outsourcing strategy</li> <li>– Performance management</li> <li>– Manage ITO</li> <li>– Continuous improvement</li> </ul>	<ul style="list-style-type: none"> <li>– Preparation</li> <li>– Outsourcing strategy</li> <li>– Performance mgt.</li> <li>– Governance</li> <li>– Governance</li> </ul>
[9] (Oza, N., Hall, T., Rainer, A., & Grey, S., 2004)	<ul style="list-style-type: none"> <li>– Delivery performance</li> <li>– Communication client / vendor</li> <li>– Added value</li> <li>– Planning</li> <li>– Monitoring and control</li> </ul>	<ul style="list-style-type: none"> <li>– Performance mgt.</li> <li>– Relationship mgt.</li> <li>– Performance mgt.</li> <li>– Outsourcing strategy</li> <li>– Governance</li> </ul>
[10] (Tan, 2009)	<ul style="list-style-type: none"> <li>– Vendor capability</li>   <li>– Internal readiness</li> <li>– Similarity of culture</li> </ul>	<ul style="list-style-type: none"> <li>– Preparation / Relationship mgt.</li> <li>– Internal readiness</li> <li>– Relationship mgt.</li> </ul>
[11] (Embleton, P. R., & Wright, P. C., 1998)	<ul style="list-style-type: none"> <li>– Strategic analysis</li> <li>– Selecting the providers</li> <li>– Managing the relationship</li> </ul>	<ul style="list-style-type: none"> <li>– Outsourcing strategy</li> <li>– Preparation</li> <li>– Relationship mgt.</li> </ul>
[12] (Derksen, 2013)	<ul style="list-style-type: none"> <li>– Partnership</li> <li>– Organizational structure</li> <li>– Functional scope</li> </ul>	<ul style="list-style-type: none"> <li>– Relationship mgt.</li> <li>– Internal readiness</li> <li>– Outsourcing strategy</li> </ul>

Table 3. Selected ITO studies and relevant criteria (cont.)

Reference	Success factors	Label
	<ul style="list-style-type: none"> <li>– Vendor construction (single or multiple ITO providers)</li> <li>– Governance</li> <li>– ITO experience (how long engaged in ITO relationships)</li> <li>– Contract</li> <li>– Project management</li> <li>– Service level management</li> <li>– Transition (support of end users)</li> </ul>	<ul style="list-style-type: none"> <li>– Outsourcing strategy / Preparation step</li> <li>– Governance</li> <li>– ITO experience</li> <li>– Contract mgt.</li> <li>– Governance</li> <li>– Performance mgt. / Contract mgt.</li> <li>– Internal readiness</li> </ul>

Besides relying on scientific studies, factors have been reviewed by three managers of companies that had ongoing IT outsourcing activities. The respondents reviewed a predefined set of IT outsourcing factors retrieved from the literature research, and provided their opinion which factors are really important in the practical conditions. The detailed data of the responses can be found in Appendix F.

Detailed examination of the identified factors can be found in Appendix G. This revision helped to elicit seven factors that most likely have an influence on the success of ITO activities. The factors with the highest score are selected as the most important and generally accepted. Those factors are (in no particular order): contract management, performance management, preparation step, outsourcing strategy, governance, and relationship management. In spite of the fact that knowledge management is behind the “top group”, it is included in the resulting set of factors because variety of literature emphasizes the vital importance of knowledge sharing and transferring for successful IT outsourcing activities.

The remainder of this section explains each of the seven elicited factors. The importance of these factors found support in other studies.

**Preparation step.** Preparative activities include vendor selection and assuring of vendor capabilities, technical expertise and knowledge. Commonly, IT outsourcing is a long-term relationship which requires close collaboration between vendor and client. Thus, selection of the right supplier can be crucial for outsourcing success. Changing a vendor can be costly, therefore it is wise to spend time and money to choose the right supplier in the first time (Embleton, P. R., & Wright, P. C., 1998). Recommendations, references and sound experience are reliable indicators of trust-worthy vendors. Selecting a proper IT outsourcing provider is often an important task, in which multiple attributes need to be carefully considered and evaluated (Chen, X., & Han, J., 2011). Besides general evaluation of vendor capabilities, the client side should assess whether these capabilities and competences match their specific needs. A survey at Siemens indicates that projects are more than twice as likely to fail when

the vendor does not have client specific capabilities than when he does (Cui, Z., Loch, C., Grossmann, B., & He, R., 2012).

**Outsourcing strategy.** Outsourcing is an important decision and should have well-defined objectives, reasons and expected outcomes. By identifying the business functions to outsource, companies can benefit from an increased specialization in the areas on which they choose to focus, through increased learning, shared experience, professional career path incentives or other ways that enhance value (Alexander, M., & Young, D., 1996). However, wrong outsourcing decisions can lead to financial losses, business failures and unexpected unmanageable risks to companies (Ngwenyama, O. K., & Bryson, N. , 1999). As far as outcomes of outsourcing activities has an ongoing impact on the organization, the decision to outsource might involve not only operational managers, but also executive management who has a responsibility to formulate long-term objectives and distinguish core / non core competencies.

**Governance.** There is a consensus among scientists that outsourcing is more about managing the services than simply purchasing them ( (Clark, T. D., Zmud, R. W., & McCray, G. E., 1995); (Davis, 1996); (Klepper, 1993)). Introducing outsourcing initiatives rises new operational and organizational challenges such as what risks exist and how they should be mitigated, whether outsourcing brings benefits and so on. Thus, effective governance and management mechanisms are critical for the success of outsourcing. Governance includes, but is not limited to resolving possible conflicts, tracking and measuring the results, managing both external and internal relationships, and so on. IT Governance Institute (Institute, 2008) defines governance of outsourcing as a the set of responsibilities, roles, objectives, interfaces and controls required to anticipate change and manage the introduction, maintenance, performance, costs and control of third-party provided services.

**Performance management.** IT outsourcing is a strategic decision with the major goal of cost reduction and performance improvement. Unfortunately, ITO projects are not always successful and result to failures and dissatisfaction of companies (Weakland, T., & Tumpowsky, B., 2005). Therefore the results of outsourcing activities might be continuously tracked to ensure that they are synchronized with initial objectives. Providers suggest that in order to be accountable for achieving certain levels of performance, the metrics used must be highly objective and quantifiable (Zhao, Y., & Xu, L., 2009). When companies outsource their functions without developing performance measures, it is getting impossible to know whether outsourcing activities are successful or it is better to return them in-house. (McIvor, R., Humphreys, P., McKittrick, A., & Wall, T. , 2009) and (Lankford, W. M., & Parsa, F., 1999) agree that it is necessary to formulate and quantify requirements and develop a baseline for performance measures.

**Contract management.** There is a large volume of published studies describing the role of contract management. The contract defines the rights, liability, and expectations of both the outsourcing vendor and the outsourcing customer concerned and is often the only solid mechanism for regulating the relationship of the parties (Lee M. K., 1996). Long-term success of IT outsourcing relationship heavily depends on a thorough understanding of contract. Contracts have traditionally been the primary vehicle through which IT outsourcing relationships have been governed (Clark, T. D., Zmud, R. W., & McCray, G. E., 1995). Within IT outsourcing literature contracts have been mentioned as an important tool to align expectations and strategies (Grover, V., Cheon, M. J., & Teng, J. T., 1996). Both sides of outsourcing relationship pursue their own objectives, sometimes contradict by nature. In this way, only contract guarantees the expected achievement of these goals.

**Relationship management.** Since the nature of outsourcing evolved from a contract relationship, many organizations experienced difficulties in forming and managing a successful outsourcing relationship with service providers (Lee J. N., 2001). Effective relationship management is vital for delivering value, as well as customer satisfaction. (Sabherwal, 1999) found that most of the problems between IT outsourcing vendor and client were caused by lack of direct contact; which led to a relationship characterized by distrust and conflict. While trust directs involved parties to work together rather than seek ways to deflect blame. Several studies have reported that certain minimum level of trust is essential in establishing close cooperative relationships ((Axelrod, 1984); (Bradach, J.L., & Eccles, R.G., 1989); (Birnberg, 1998)). Trust makes the relationship more durable in the face of conflict and encouraging interactions between partners involving knowledge exchange and promotion of each other interests (Johanson, J., & Mattsson, L. G., 1987). There is an opinion that combining effective relationship management and formal contracts is fundamentally problematic, since tight contract signals distrust, and relational management is based on trust. However, (Poppo, L., & Zenger, T., 2002) empirically showed that contracts and relational governance function as complements. Extending to Poppo and Zenger's view, (Goo, J., & Nam, K., 2007) argue that well specified formal contracts may actually promote more cooperative, long-term, trusting exchange relationships.

This chapter discussed the business-IT alignment frameworks and justified the choice of Luftman's model. The main argument for using this model is that it provides clear mechanism and procedure for measuring BIA in the real practical conditions. Further, it had been shown that existing ITO maturity models do not match the purposes of the current research. Consequently, new mechanism based on the set of factors was established and confirmed with the practitioners. In the next chapter these findings will be adapted in the model construction.

# Chapter 5 Designed model

Chapter three defined the basic concepts and theory of business-IT alignment and IT outsourcing. Chapter four identified the reference model for measuring business-IT alignment maturity and set of factors which determines the success of IT outsourcing activities. This chapter presents a designed model for studying the influence of IT outsourcing activities on business-IT alignment maturity within the organization and consists of two sections. In the first section the model is constructed. Specifically the Luftman's model will be extended with two additional dimensions of *Employee engagement* and *Technology scope*. Section two explains the measurement procedure of each of the components in details.

## 5.1 Development of the model

The extensive literature review performed allowed the identification of different definitions, concepts and findings. Some of them are used in the current project for the construction of the model for measuring impact of IT outsourcing on the internal business-IT alignment in organisations. The designed model of the current study is mainly based on the concepts adopted from the literature.

As it was explained in the previous chapter, the IT outsourcing concept will be measured through the set of factors that influence the success of ITO activities. These set of factors is derived from the solid literature analysis. For the examination of BIA the maturity level this research adopts the Luftman's alignment maturity assessment model (Luftman, 2000). Luftman's instrument provides strong coverage of a considerable number of dimensions<sup>1</sup>. However, the alignment is a complex construct and it is practically impossible to capture all possible views in one model. The argument is that this model is missing the important dimensions and might be completed.

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<sup>1</sup> Note: words dimension and criterion are further considered to be interchangeable.



### 5.1.1 Employee engagement dimension

The current research adopts the view of alignment proposed by Luftman. Reich and Benbasat (Reich, B.H., & Benbasat, I., 2000) propose an alternative interpretation and see the business-IT alignment concept as the linkage of intellectual and social dimensions. Intellectual dimension of alignment in simple words means a fit between business and IT strategies, plans, and goals. Social dimension of alignment addresses such aspects as mutual understanding and quality of communication between business and IT teams, awareness of regular employees about the strategic goals and possible contribution in their achievement.

Literature analysis in Chapter 3 shows that most of the available studies focus on intellectual alignment, while the importance of social alignment is rarely addressed. There has been relatively little literature published on how to achieve and maintain social alignment, although the scientific evidence exist that social alignment is a predictor of intellectual alignment (Preston, D. S., & Karahanna, E., 2009). Preston and Karahanna argue that often the tension between IT and business is a result of ineffective collaboration and communication, rather than technological constraints. The authors conclude that solving the problem of social alignment will contribute to technological alignment, increase value of IT in business and improve BIA in general.

Reich and Benbasat (Reich, B.H., & Benbasat, I., 2000) recognized the importance of social alignment by explicitly separating it from an intellectual domain. The authors state that four factors influence social dimension of alignment – shared domain knowledge between business and IT executives, IT implementation success, communication between business and IT executives, communication between business and IT planning process. Luftman partially evaluates aspects of social alignment in the Communication and Partnership criteria of his model. For example, he assesses perceived trust and relationship, or how well information systems and business executives understand each other's strategies.

The available studies understand social alignment through such factors as shared domain knowledge, quality of communication, trust and respect (Reich and Benbasat, 2000; Chan, 2002; Reich and Benbasat, 2003; Tiwana, A., Bharadwaj, A. S., & Sambamurthy, V., 2003); (Chan, 2002)). Addressing important elements of the social alignment construct, these studies are looking only at the strategic level. However, alignment is a cross-organizational notion and should be transferred to the tactical and operational level. Achievement of the company-wide social alignment is often inhibited by poor alignment of the involved employees. The overall success of a company is feasible only when all levels from owners to regular employees are aware about company's strategic plans and their possible contributions to the goals described in those plans.

Gagnon and Michael (Gagnon, M. A., & Michael, J. H., 2003) argued that employee factor should be included in studying business strategies, rather than focusing only on organizational factors and their outcomes. Regular employees are the actual users of

information technologies; activities of aligning business and IT undertaken at the management level affect them as well.

The importance of employee engagement was realized by Drucker in 1954 (Drucker, 1954). He wrote that in order to accomplish alignment between business and IT, individuals within an organization should behave in contributory way to support the strategic goals of the organization. Boswell et al. (Boswell, W. R., Bingham, J. B., & Colvin, A. J., 2006) writes that understanding the organization's strategic goals and an accurate assessment of how individual actions contribute to those objectives are critical for the business-IT alignment maturity. Authors emphasize the importance of lower-level employees' awareness of company's strategy. This will increase trust and commitment to the company, and increase the possibility that the strategy is executed correctly. The scientific evidence exists that the employees produce more positive work-related outcomes when they understand what is expected from them (Boswell, W. R., & Boudreau, J. W., 2001). Gagnon and Michael (Gagnon, M. A., & Michael, J. H., 2003) noted that if employees are aware of strategic plans and goals, they are more likely make decisions which are in line with these strategies. Another study indicates that managers often know the IT and business organizational strategies, but they are not able to effectively bring important information to other employees within the organization, resulting in the failure to achieve strategic goals (Navedo-Samper, T., Ferrer, E., & Rivera-Ruiz, I., 2013).

Social alignment is a complex construct which should be addressed at both strategic and non-strategic levels. Luftman's model covers social dimension at the strategic level, while not providing insights at the tactical and operational levels. The importance of employee engagement is supported by literature; consequently the proposition is that this dimension should be considered along with six dimensions of Luftman in order to complete the concept of business-IT alignment.

Chong et al. (Chong, A., Ooi, K., Chan, F.S., & Darmawan, N., 2011) studied the influence of employee alignment on the business-IT alignment in organizations. The authors propose to measure employee alignment through the following four factors: (1) perceived organizational trust, (2) perceived communications on IT-business strategies to employees, (3) employee commitment to business-IT strategies and (4) perceived knowledge on IT-business. Along with theoretical propositions, Chong et al. developed an empirical model to examine the relationship of employee alignment and business-IT alignment. This model is consistent with the purpose of measuring employee engagement alignment and is adopted in this research. The model is based on the four mentioned above factors, where set of statements is formulated for each factor. Factors and corresponding statements can be found in Appendix H. The measurement approach is explained in the next section.

### 5.1.2 Technology scope

Belfo and Sousa (Belfo, F. P., & Sousa, R. D., 2012) undertook a critical review of Luftman's model. The main critique point is that technology dimension is not addressed in the full extent though it is partially covered in the *Scope and Architecture* criterion. Luftman considers technology factor by measuring the degree to which IT is able to provide a flexible and transparent infrastructure, apply emerging technologies, and drive business processes and strategies. However, it does not address how IT projects impact the achievement of specific business goals. High alignment between information systems and company's business strategy can be achieved by using specific applications in the line with the business directions vital to company's success.

Organizations implement new information technologies in the existing IT landscape with the purpose of accomplishing specific needs and goals. For example, in the situation when management realizes that information provided by the existing information systems does not sufficiently support decision-making process. Management decision making is heavily based on complete, accurate and timely delivered information; and effective usage of IS can provide the needed data. Another example refers to the marketing IS as far as in the highly competitive market environment companies should have information to support the management of marketing activities. Marketing information systems can be fast and powerful tool for such purposes. Large online retail company Fingerhut applied data warehousing technology for processing the transaction data of 75 million customers in order to design targeted marketing campaigns (Kearns, G. S., & Lederer, A. L., 2000). In the case of supply chain management, integration of information systems of various parties in one inter-organizational information system facilitates information sharing, thereby enhancing organizational flexibility and responsiveness while minimizing risk and inventory costs (Krause, D. R., Handfield, R. B., & Tyler, B. B., 2007).

Financial institutions use process mining tools and technologies in order to identify the most profitable clients and target them with specialized services. Ismail and King focused on the alignment of accounting information systems (Ismail, N. A., & Zin, R. M., 2009). The results of their study show that companies with higher accounting IS alignment had achieved better organisational performance than firms with lower alignment. Traditionally accounting information systems are viewed as the source only financial historical data. Shift in the usage of accounting IS from administrative and operational tasks to strategic long-term planning positively influences organisational performance.

All these examples represent information systems that are aligned with specific business goals and plans. The designed model of the current research would benefit from evaluating the contribution of domain-specific information systems to the business objectives.

Study of (Sabherwal, R., & Chan, Y.E., 2001) examines how IT projects assist specific organizational objectives, such as monitoring day-to-day operations, controlling product

sales, supporting strategic decision making or automating information flow across organization boundaries. In their model *Technology scope* dimension is labelled as “IS strategy” and is understood in terms of four attributes which reflect traditional classification of information systems – operational support systems, market information systems, strategic decision support systems, and inter-organizational information systems. Evaluation of each type of information systems can provide the understanding how information systems / information technologies support business. Therefore, this dimension is considered to be important for realising alignment between IT strategy and business strategy and is included in the designed model.

In the proposed model this new dimension is called *Technology scope*. The mechanism for measuring *Technology scope* is adopted from (Sabherwal, R., & Chan, Y.E., 2001) model. Four types of information systems represent four attributes. Each of the attribute consists of set of statements with the range of answers from 1 [Strongly disagree] to 5 [Strongly agree]. The items for four attributes are provided in Appendix I. The measurement procedure is explained in the next section.

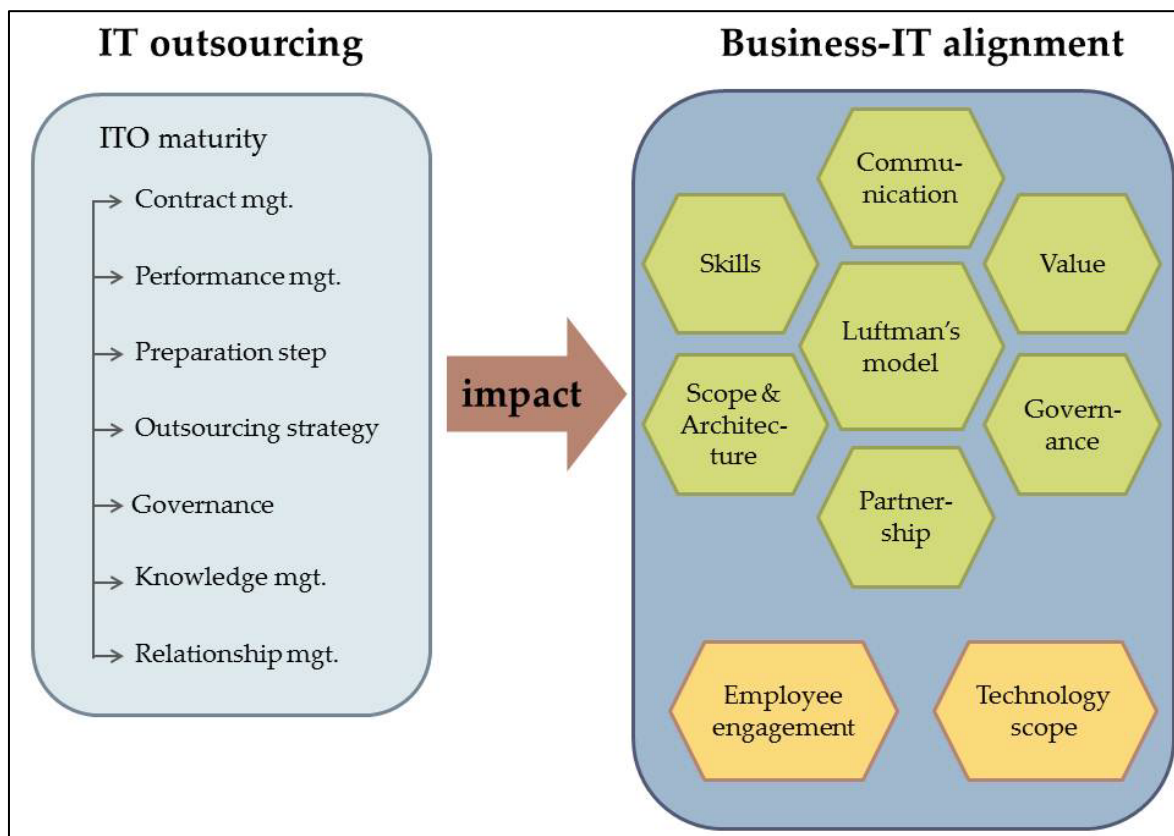


Figure 2. Designed model

In this section the instrument for measuring business-IT alignment maturity is completed by adding two dimensions *Employee engagement* and *Technology scope*. It was justified that both

of them have strong impact on aligning business and IT strategies and goals. Figure 2 illustrates the designed model. The model represents the statement that IT outsourcing maturity has an impact on the alignment level. The measurement procedure is explained in the next section.

## 5.2 Measurement approach

At the high level, the mechanism of measuring IT outsourcing impact on internal business-IT alignment consists of two parts: measure ITO maturity and measure BIA maturity. The remainder of this section explains the measurement methodology for each component of the designed model shown in Figure 3.

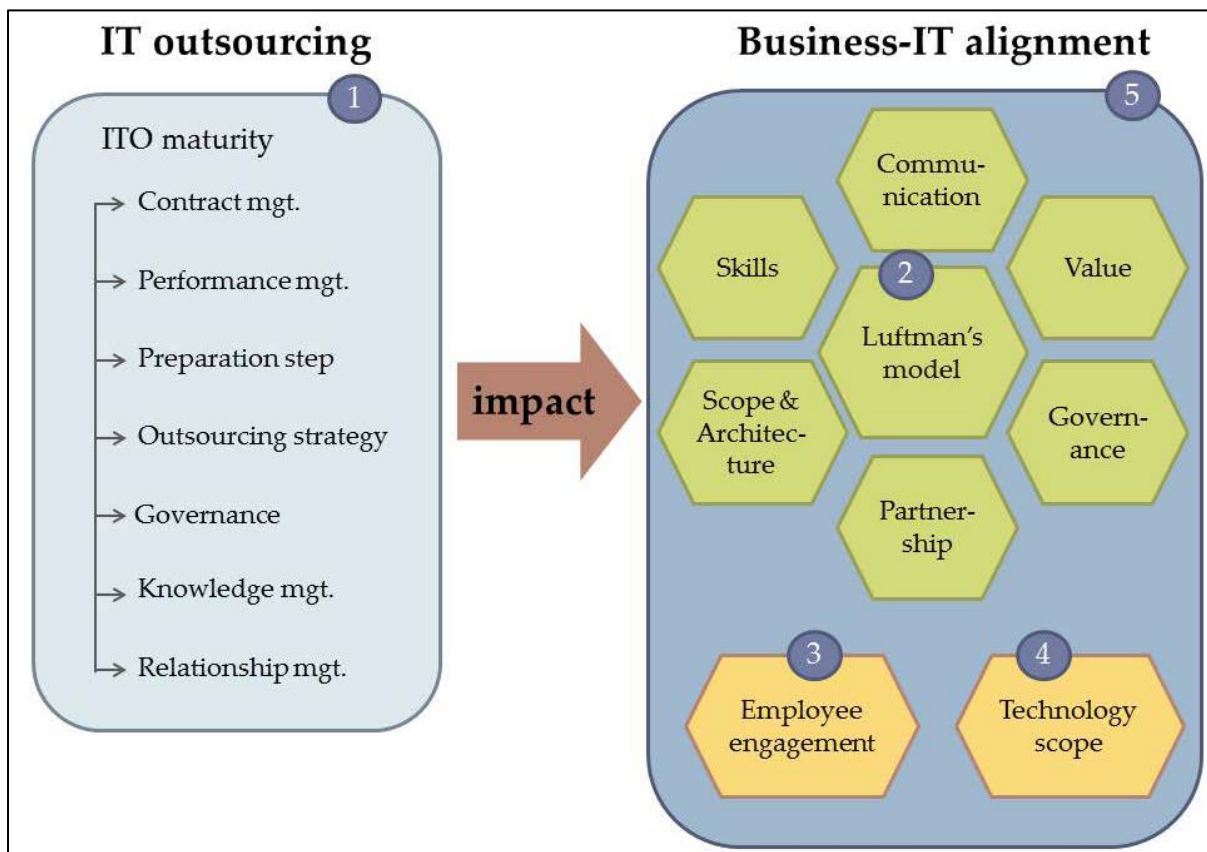


Figure 3. Designed model (numbered)

### 1) Measure maturity of ITO

Maturity of ITO is measured within set of factors. Based on the research described in Section 4.5, the following factors determine the maturity level of ITO: contract management, performance management, preparation step, outsourcing strategy, governance, knowledge management and relationship management.

These factors for the purpose of validation are converted to the statements (see Table 4). Respondent should evaluate how much he agrees / disagrees with each statement, in other words how much the statement is related to the situation within the company. In the questionnaire each short statement attempts to reflect the whole meaning of the factor in several words.

Table 4. ITO factors and corresponding questions

Factor	Question
Contract management	1. Our contract with service provider is thought out in details, describes procedures in the case of disputes and actions in the case of contract violations.
Performance management	2. We use set of quantifiable metrics to constantly measure the delivered value ensure synchronization with long-term outsourcing objectives. 3. We use service level agreement (SLA) as a practical day to day tool to measure performance.
Preparation step	4. We carefully explored the market before selection of the right provider.
Outsourcing strategy	5. Our outsourcing strategy is aligned with business objectives. 6. Our outsourcing strategy includes the goals of outsourcing and expected outcomes.
Governance	7. Being involved in IT outsourcing relationships, we continuously monitor, control and if necessary adjust our requirements and actions. 8. Top management formulates strategic directions and reviews results regularly.
Knowledge management	9. We have ongoing exchange of expertise and knowledge with our outsourcing provider. 10. We unwillingly share and transfer knowledge as far as it is part of company's assets.
Relationship management	11. We establish trustful and cooperative relationship with our outsourcing provider. 12. We promote personal relations and social bonds with our vendor.

For some factors two statements are formulated. It is done to avoid double-barrelled questions which can confuse the respondent. Double-barrelled questions are the one that ask two questions in one. For instance, governance factor includes two statements – one is about such characteristics of governance as monitoring and control, while the second one explores the top management involvement. Combining them in one questions could confuse the respondent in the situation when control and monitoring is done on the operational level of

managers or team leaders, but senior management is not involved in this process. Another representative case is related to the Performance management factor. It is vital to know whether the organization uses quantifiable metrics. However not all organizations use service level agreements, measuring instead financial indicators, such as turnover, net savings, cost per employee, etc.

Each question is answered by five-point Likert scale with the range of answers [Strongly disagree; Disagree; Neutral; Agree; Strongly agree]. The maturity level of IT outsourcing activities is determined as the average of the answers based on the five-point scale. The model takes as a premise that [Strongly disagree] corresponds to one and [Strongly agree] corresponds to five score.

## 2) Measure six dimensions of Luftmans's model

It is to be recalled that Luftman defines alignment within the six criteria rating each on a scale from 1 (lowest) to 5 (highest). Further each criterion is broken apart several measurable attributes. In total, alignment is identified within 38 attributes. The six business-IT alignment dimensions and their attributes are illustrated in Appendix B Figure 2.

The hierarchy approach of the Luftman's model is illustrated in Figure 4. For reasons of space only partial representation is shown using the example from Table 5, and a complete overview can be found in Appendix J.

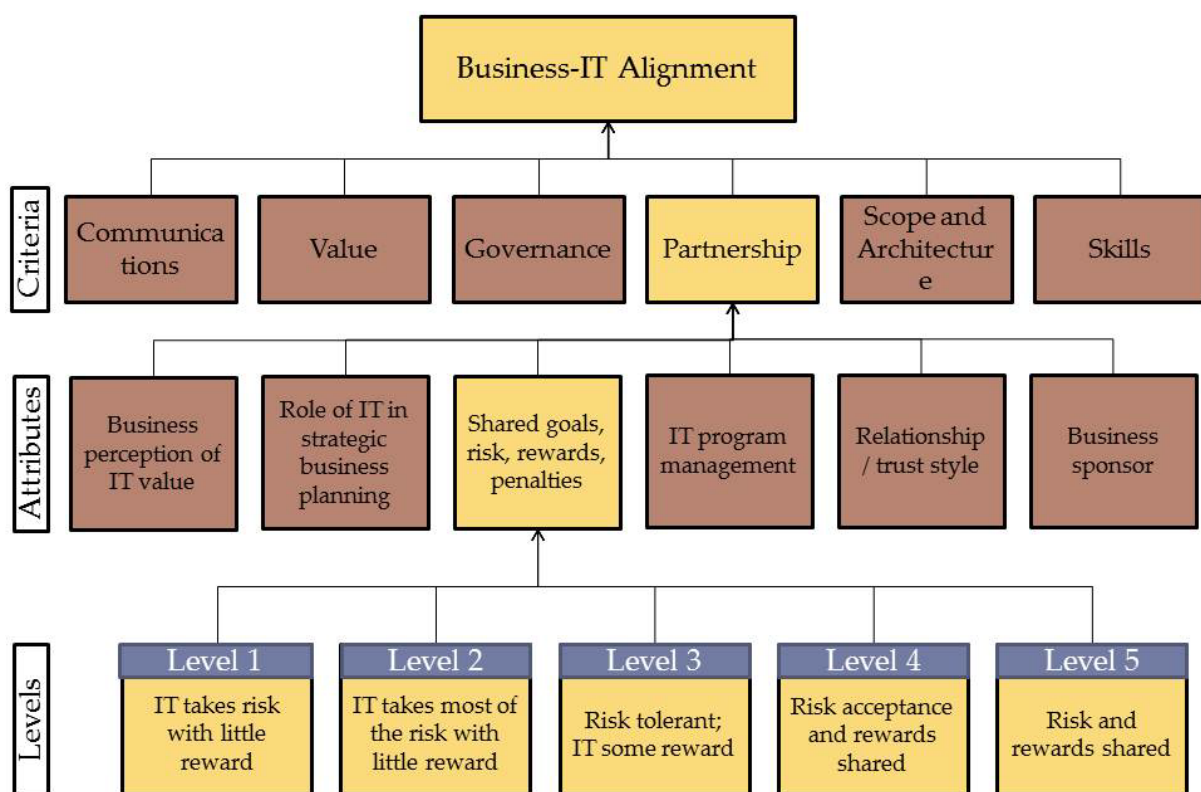


Figure 4. Hierarchy of Luftman's model

Table 5. Example of maturity of the one attribute within one criterion

<b>Criterion</b>	Partnership
<b>Attribute</b>	Shared goals, risk, rewards and penalties
Level 1	IT takes risk with little reward
Level 2	IT takes most of the risk with little reward
Level 3	Risk tolerant; IT some reward
Level 4	Risk acceptance and rewards shared
Level 5	Risk and rewards shared

The visualization helps to make the described theory explicit and more understandable. The figure shows that strategic alignment is composed from six criteria, which in turn have their attributes on the level below. Levels for each attribute are located on the lowest level of the hierarchy. For each attribute there are five possible levels of maturity from lowest to highest.

Luftman formulated specific scale of answers for each attribute, but generally the scale is the same for all attributes:

- 1 - means that this does not fit the organization,
- 2 - stands for low level fit for the organization,
- 3 - denotes to the moderate fit for the organization,
- 4 - determines that this fits most of the organization,
- 5 - describes strong level of fit throughout the organization.

For each attribute the most relevant answer (level) is chosen. The average of all attributes within one criterion leads to the average maturity level per criterion. In other words, each of the six criteria can be at level from one to five. In Luftman's model the average of all six criteria as a whole presents the current maturity level of BIA in the selected organization. Since two more dimensions (criteria) are added in the proposed model for measuring business-IT alignment concept, the maturity level of BIA will be determined as the average of eight criteria. This concept is explained further.

### 3) *Measure employee engagement alignment score*

The employee engagement alignment is measured within four factors: perceived organizational trust, perceived communications on IT-business strategies to employees, employee commitment to business-IT strategies and perceived knowledge on IT-business. Each factor consists of set of statements which should be answered by five-point Likert scale with a range of answers [Strongly disagree; Disagree; Neutral; Agree; Strongly agree]. The level of the employee engagement will be determined as the average of all answers.



#### 4) *Measure technology scope score*

Similarly to other criteria, *Technology scope* dimension consists of four factors. Each factor represents one type of information systems – operational support systems, market information systems, strategic decision support systems, and inter-organizational information systems. Each factor consists of set of statements with a range of answers from 1 [Strongly disagree] to 5 [Strongly agree]. The level of the *Technology scope* dimension will be determined as the average of all answers.

#### 5) *Determine business-IT alignment maturity level*

The business-IT alignment maturity level is measured in the current project within eight dimensions. Six dimensions of Luftman's model have established measurement approach with five levels. *Employee engagement* and *Technology scope* dimensions are also measured within five points. This fact enables combination of all eight dimensions in one model, and the maturity level of BIA is determined as the average of eight criteria. Graphically this concept is illustrated in Figure 5. Logically the final score can be in the range from one to five.

The levels of alignment are adopted from Luftman. The score, a company achieves for the eight criteria, is further correlated to the one of five levels of strategic alignment maturity (see Appendix B Figure 3) and so defines the organization's business-IT alignment maturity. The levels of alignment maturity are described in Appendix K.

In this section the model was constructed. The designed model seeks to explore correlations between IT outsourcing success and level of alignment within the organization. The classical model of Luftman was complemented with two additional dimensions of *Employee engagement* and *Technology scope*. The overall measuring procedure was explained in the second part of this chapter. In the next chapter the model will be validated using case study method. The findings will provide the possibility to answer research question 3 and formulate hypotheses regarding the relationships between BIA and ITO.

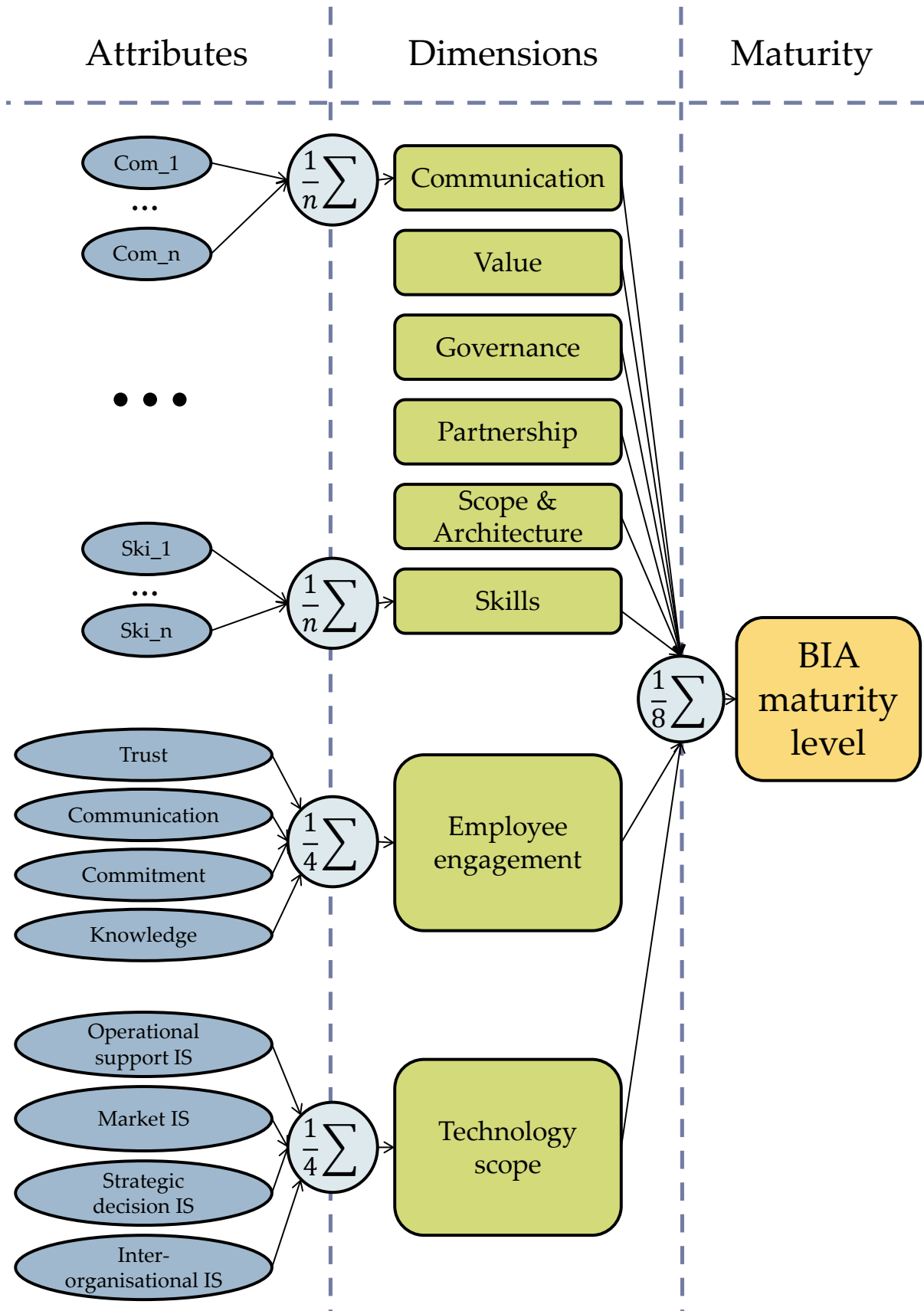


Figure 5. Calculation of BIA maturity score

# Chapter 6 Findings

In the previous chapter the model for exploring the relationship between IT outsourcing success and business-IT alignment maturity within the organization was designed. The present chapter introduces the results of the validation step. The case study and questionnaire results provide empirical evidence for the designed model. The case study participants were interviewed and filled in the questionnaire. Additionally, three surveys complemented the questionnaire data. Based on the approach presented in Chapter 5, the purpose of this section to answer the research question 3 and to explore the impact of IT outsourcing on the alignment level.

This chapter is structured as follows. First, the procedure of performing an empirical study is explained in details. The second section describes the selected case studies. The third section analyses the results per individual case. The final part presents the results derived from analysis of questionnaires and outlines general findings.

## 6.1 Conduction of the empirical study

### 6.1.1 Set up of the empirical study

The case study method pursues two purposes. The first goal is to formulate hypothesis regarding the nature of relationship between business-IT alignment and IT outsourcing. The second goal is to evaluate the designed model. Consequently, this chapter is looking for the answers to the following questions:

- What hypothesis can be generated about the effect of IT outsourcing on the level of alignment maturity?
- What other hypothesis can be drawn from the obtained results with respect to BIA and ITO?
- Is the proposed approach easily applicable in practical conditions?

Case study was conducted in the four companies operating in different industries: logistics, finance, consultancy, and technology. The data collection strategy was based on semi-structured interviews and on-line questionnaire. Four in-depth interviews were conducted during the case study. These participants also filled-in the questionnaire. The main purpose

of the interview was to obtain a good understanding of the company and its operational processes. In addition, some questions cannot be formulated in an appropriate form for a questionnaire, for example, the description of the organizational structure and place of IT department in it.

The original idea was to complement case study data with a survey data. Survey data had to be gathered from the on-line questionnaire distributed in companies. As the first step, an e-mail was sent to 460 companies asking them to participate in the survey by following a link to an electronic questionnaire. The number of failed deliveries due to invalid addresses or unavailable mailboxes was 23 questionnaires. Eight companies explicitly declined to participate by sending a rejection e-mail. Ultimately, three survey questionnaires were received back and analysed. The results of these questionnaires are also included in the analysis with the main purpose to enrich the data set.

The most likely explanation of the low response rate is the fact that e-mail had been sent not to a direct person but at *info* email (e.g., info@companyname.com). In the majority of cases the email is received by secretary or goes to a spam box, and therefore never reaches a targeted audience. The recommendations of inducing response rate are suggested in Section 7.3.

### 6.1.2 Questionnaire

The questionnaire is developed as the instrument of the initial measuring maturity levels of alignment and IT outsourcing. Additionally, a questionnaire gives the opportunity to gain deeper insights in the subject under the discussion and find the answers for some unrevealed questions. The questionnaire consists of three parts: profile information, questions about alignment within the organization and questions about IT outsourcing situation. Each part is annotated with instructions and explanations. The full questionnaire is displayed in Appendix M.

Profile information includes questions regarding the role (managerial / non managerial) and function (IT / business) of the respondent, sector the company operates in, number of employees and the importance of information technologies for the company. The industries topology is taken from NASDAQ (Nasdaq) industry differentiation.

The second part refers to the assessment of business-IT alignment maturity in the company. The first question asks the respondent to provide his opinion whether the selected definition of Maes (Maes, R., Rijsenbrij, D., Truijens, O., & Goedvolk, H., 2000) fully covers the concept of BIA to the extent of his understanding, and add some missing points (if there are any). In the next question the respondent should determine the current level of alignment in the organization based on his perception of the situation. It could be interesting to analyse perceived level and the level calculated from eight alignment dimensions.

The alignment maturity level of each company is evaluated based on eight dimensions as described in Chapter 5. The attributes of the Luftman's model are converted to questions using the explanations provided by Luftman. *Employee engagement* and *Technology scope* dimensions consist of a number of statements taken directly from the works of (Reich, B.H., & Benbasat, I., 2000) and (Sabherwal, R., & Chan, Y.E., 2001) respectively.

Each question should be answered twice. First, a respondent should determine the current level for the attribute, followed by the desired level in two years. The reason is that if to ask "what is the desired level of maturity?" without specifying the time period the respondent most likely answers the highest level 5. It could be the desired level but may be not achievable in foreseeable future. The time period of two years is also chosen not coincidentally. Studies show that it takes an average of 30 months to move from level 1 to level 2; moving between the other levels of maturity will take an average two years for an organization ((Biberoglu, E., & Haddad, H., 2002); (Paulk, M. C., Curtis, B., Chrissis, M. B., & Weber, C. V., 1993)).

The IT outsourcing section contains questions about outsourcing situation in the company and specific questions linked to factors. The factors were elaborated in Section 4.5. Respondents are asked to choose from the several options which services they outsource or provide their own option. Since the cloud computing is also topic of interest in the current research, the respondents were asked to determine which services they outsource specifically in the cloud. It is also interesting to analyse the reasons behind outsourcing decisions. Consequently, these questions explore the reasons behind outsourcing (the most common reasons are cost reduction, access to expertise and focus on core competencies), the criteria of vendor selection and metrics for performance measurement. Specific questions are dedicated to factors influencing IT outsourcing success. The conversion was explained in Section 5.2.

All ITO factors are considered to have the same importance for defining ITO maturity level; and have the same weight for calculating the ITO score by taking the average of the answers.

It should be noted that questionnaire development is at the preliminary stage. Therefore, one of the objectives of the empirical study is to validate the quality of questionnaire, and receive recommendations for improvements and modifications.

The questions are formulated in English language. The electronic questionnaire is designed using on-line tool Google Form. The questionnaire is available via URL and the link is sent to the prospective respondents. The link to access questionnaire is [LINK](#).

### 6.1.3 Evaluation of the reliability and validity of questionnaire

Questionnaire is an instrument for measuring BIA and ITO maturity levels. However, before using this data the issue of reliability and validity of the measures should be addressed. There are two ways to assure reliability of measures by testing (1) stability of measures and (2) internal consistency.

Stability of measurement, or test–retest reliability, is estimated by administering the same questionnaire with the same respondents at two different points in time and determining the strength of association of the two sets of scores (Kimberlin, C. L., & Winetrstein, A. G., 2008). Because of the time limitation, it was decided not to conduct test-retest reliability check. Stability of measurement is assured by promising that participants' responses are confidential. Then respondents could express their real opinion. It is expected that next time they would answer in the same manner.

Internal consistency is measured using Cronbach's  $\alpha$  (alpha) statistics. The extent to which all questions contribute positively towards measuring the same concept is known as internal consistency. This is a key element for evaluating the quality of the overall score. Cronbach's  $\alpha$  is one of the most widely-used measures of internal consistency (DeVellis, 2006). This coefficient ranges from 0 to 1 with higher coefficients indicating higher levels of reliability. The items are considered internally consistent if Cronbach's  $\alpha$  is equal 0.7 or exceeds it (Tavakol, M., & Dennick, R., 2011).

Cronbach's  $\alpha$  is calculated for BIA maturity level score and for ITO maturity level (see Table 6). The results show that the scores are within the satisfactory range [0.7; 1] and therefore can be considered reliable.

Table 6. Values of Cronbach's  $\alpha$  reliability coefficient

	<b>BIA</b>	<b>ITO</b>
Cronbach's $\alpha$	0.977	0.946

Validity of the questionnaire refers to whether a questionnaire is measuring what it purports to (Bryman, A., & Cramer, D., 1997). The validity of questionnaire had been demonstrated in Section 2.4.2 and is shortly recalled here. Evaluation of the face and content validity was performed by asking external users to evaluate the clarity and representativeness of the questions. After receiving their feedback the questions were rephrased to make them more understandable and straightforward.

The questionnaire proved to be a valid and reliable instrument for measuring impact of IT outsourcing on the level of internal alignment.

## 6.2 Case descriptions

This section presents description of four companies where case study was conducted. Most of companies are multinational corporations with the subsidiaries in The Netherlands. The analysis part focuses only on the Dutch unit of a company.

### **Company A**

Company A is a Dutch based company which provides logistic support for information flows between client companies and Dutch sea ports. The company's main product is an efficient information exchange service between multiple involved parties, both public and private. Therefore, the company is highly IT focused where IT function is the central core of the uninterrupted operations running. Roughly half of the FTE (around 50 people) belong to the IT department.

### **Company B**

*Company B* is a Dutch multinational financial corporation. The company provides the range of financial services, such as banking operations, investment banking, loans and mortgages, insurance services, etc. The company employs worldwide 82 000 employees, and around 7 000 employees in the Dutch headquarter.

The information technologies are the core of business operation. All daily operations are dependent on smoothly running information technologies. *Company B* is in transformation from a bank to an IT company which delivers financial services.

### **Company C**

Company C is a French multinational consultancy company. Mainly it focuses on the IT consulting services. The total number of employees worldwide is more than 130 000, while the Dutch division has 5 500 FTE.

Information technologies are reported to be very important since without their availability it would be impossible to conduct business processes in place and provide customer services at the high level. IT performs supportive function and does not have significant impact on strategic business planning. IT department mostly responses to the business requests.

### **Company D**

*Company D* is a Japanese imaging and electronics company with a worldwide presence. The company has the subsidiaries in the Netherlands as well. The total number of employees is around 107 000 FTE, while the Dutch division employs 1 300 FTE. IT department consists of 40 FTE. The main business highly relies on the information technologies.

The company now is in the process of transferring governance of IT department to the European headquarter. Some of IT management functions are already centralized on the European level. Local IT department is responsible for first-line support issues, while critical disruptions are handled from Europe.

### 6.3 Discussion of the case study results

This section presents the results and findings per individual case. The data was collected through interviews and filled-in questionnaires. Table 7 depicts the high level overview of the companies participated in the case study research.

Table 7. Overview of the case study companies

Company	Comp A	Comp B	Comp C	Comp D
Industry	Logistics	Finance	Consultancy	Technology
Number of employees	50-200	2000+	2000+	500-2000
Function of the respondent (IT / Business / Other)	Enterprise architect	IT	IT	Business
Role of IT	Critical	Critical	Very important	Very important

#### 6.3.1 Results Company A

##### **Business-IT alignment:**

Figure 6 illustrates the scores of BIA assessment in *Company A*. The current BIA maturity score of *Company A* is 2.83.

The communication is assessed at level 3.00. According to (Luftman, J., & Kempaiah, R., 2007), it is relatively high level of alignment. The respondent says that especially in the stress conditions (e.g., deadline) the importance of personal communication is heavily underestimated. Aspect that positively influences the level of communication is the business management awareness about IT projects, its' progress and problems.

Value measurement is at level 3.00. At this level IT is not seen as a cost centre anymore; the usage of balanced metrics as the combination of IT and business metrics is evolving. However, the company does not get the maximum value from IT activities. In *Company A* the IT department is focused on the routine functional issues such as maintenance and support of the existing services. The result is that IT team loses the broad perspective and



does not contribute to the continuous improvement of the whole organization. Additionally, assessment and reviews are performed only when problems occur.

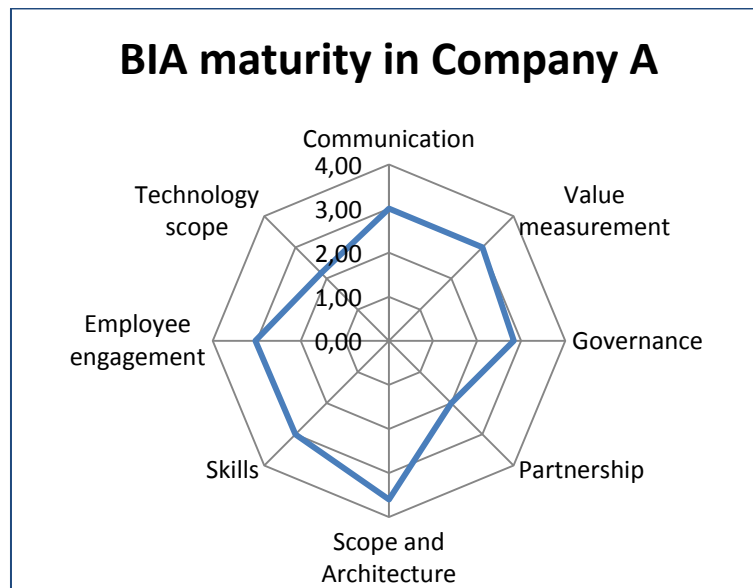


Figure 6. BIA maturity score in Company A

Regarding Governance criteria, the organization is almost at level 2.80. Supply-demand nature of organization implies directive approach when business side assigns tasks while IT side responds to the requests. The good point is that IT is not considered anymore as a pure cost centre, but evolving in an investment centre.

Partnership dimension is assessed at the lowest rate of 2.00. First reason is the conservative perception of business that sees an IT as a support function. Another reason lays in the supply-demand nature of the interactions between business and IT. In this situation business side has the driving power while IT does not participate in the strategic business planning.

Scope and Architecture dimension has the highest level 3.60 among eight alignment areas. It is not surprising since IT drives all organizational changes in *Company A* and the scope of IT usage is at level 5.

Skills dimension is at the level 3.00. A Change management board in *Company A* is responsible for aligning all changes across the company. However, the respondent says that generating of innovative ideas is not encouraged in the company. The confirmation of this can be found in the *Employee engagement* dimension: for example, the respondent disagrees (level 2) that company manages to be at the frontline with new technologies.

Employee engagement alignment is assessed at level 3.03. It is interesting to notice that the total score was harmed by the *Employee commitment* and *Knowledge of strategies* factors, while organizational trust and ability to get strategic goals and plans across the organization were rated above 3.6. It means that company did not manage to build loyal and trustful

relationships with the employees. Perhaps, the reason lays in the usage of the top-down approach. Also management should take into account the opinion of the regular employees regarding business' goals, plans and policies. In many cases regular employees see possible bottlenecks in the business processes more clear since they work with them every day. The mismatch can be seen in the fact that employees are informed about business-IT strategies in a complete and timely manner, however they do not fully understand it.

Technology scope is rated at the level 2.18. Only inter-organizational IS are at the moderate level and perform its functions, while marketing, decision-support and operational support systems are rated around level 2. The management should re-think how to align capabilities and functionality of existing IS with the purposes of their implementation.

### **IT outsourcing:**

*Company A* outsources several IT services, such as application development, infrastructure maintenance and hosting. The following services are outsourced in the cloud: data storage, backup solutions, virtual machines, and database processing.

The maturity of IT outsourcing activities is at the level 2.58. Outsourcing strategy is ranked at the low level meaning that it is not aligned well with strategic planning and does not explicitly determines the goals and expected outcomes.

The selection of the provider as a part of the Preparation step was done very carefully. The company is semi-governmental; hence it was obliged to hold a European tender for the provider selection.

Contract management is rated at the level 1. The company reports that it is nearly impossible to capture all possible moments from the beginning; otherwise they would formulate the contract requirements much sharper. No one can know upfront how much one or another violation or incident will cost.

As a part of the Governance factor, the company especially emphasizes the importance of monitoring and adjusting the requirements in the contract.

Relationship management factor is rated at level 4. In the beginning the relationships between *Company A* and service provider were ruled by contract, but steadily grew in more inter-personal communication. The big step forward to loyal relationships was the locating several outsourcer employees permanently in the office of the company. For example, solving complex question which requires answers to a lot of smaller questions, and in this case physical presence of knowledgeable staff with direct access to information is very valuable.

The company developed relationship with provider in the way that the former exhibits a proactive behaviour suggesting improvements for IT-related issues. In the ideal situation, the vendor should provide feedback for business-related matters.

The company had to change the way of work after outsourcing activities to the external provider. First of all, the range of possible issues varies a lot. Thus, the same as with business-IT alignment, alignment relationships with service provider should be done at several levels – strategic, operational and incident-management level. The attempt to combine them in one organizational flow negatively influences internal processes, for instance, results in the increased waiting time and unclear communication channels.

### **Lessons learnt:**

#### Alignment:

- Alignment should be maintained at several levels: at the top management level as well as at the level of project management.
- Ongoing continuous process: evaluation of BIA should be repeated periodically with close monitoring of results
- Adopting Scrum project methodology positively influenced the internal alignment.
- Change management should be introduced in an organization in order to enable fast adaptability to the environmental changes and behave more dynamic.
- Communication and cooperation are the essential components of alignment.
- IT should see bigger picture and propose improvements.
- Future: IT can be a service by itself, driver for delivering business ideas.

#### Outsourcing:

- Contract management – probation period.
- Feasible distance of outsourcer and have on-side employees.
- Factors of ITO: incident management and organizational structure.

## 6.3.2 Results Company B

### **Business-IT alignment:**

The current BIA maturity score of *Company B* is 3.79 (see Figure 7).

IT team transforms the traditional way of perceiving IT as a supplemented function. The interview with the respondent showed that business and IT are highly aligned across all eight BIA dimensions.

Communication is assessed at the level 3.33. Business used to provide directive instructions to IT without discussion of the goals and possible outcomes. Currently IT has a word and fosters discussion about the added value, the reasons behind the requests, how they can increase customer satisfaction. The communication level is expected to grow in future.

Value measurement is at level 4.00. The performance is measured in the end of every sprint (iterative development in Scrum) in terms of story points. Story point is an arbitrary measure used by Scrum teams in estimating requirements. Each project has a specific number of story points, and performance is measured as the number of story points that were completed and accepted by the product owner as "done" in this one sprint. However, business and IT metrics are not linked yet.

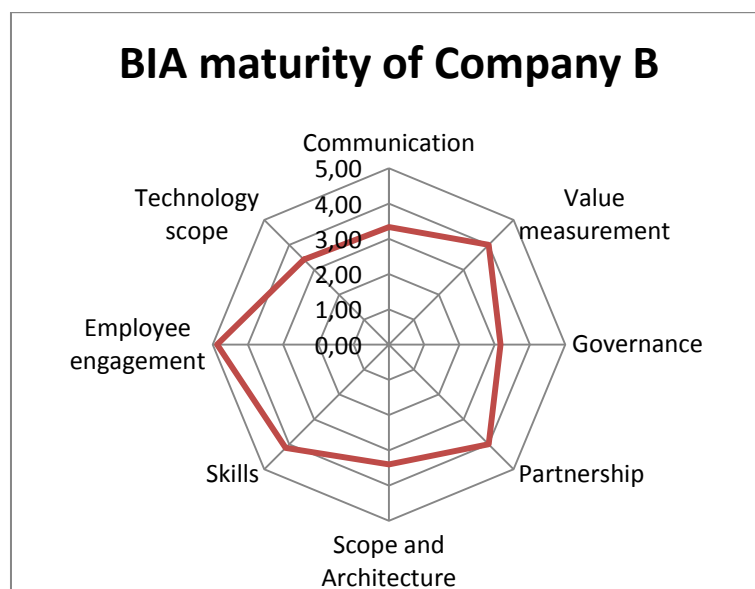


Figure 7. BIA maturity score in Company B

Governance dimension has the level 3.17. The projects, which worth of investments, are chosen in virtue of best value for business and best feasibility for customers. For example, if the customer has the problems with an on-line banking this project is prioritized over others.

Partnership is assessed at the level 4.00. IT is a part of business strategy. Business and IT teams are open for discussions and see the contribution of each other.

Scope and Architecture has the level 3.40. The chosen architecture is not flexible enough. The reason lays in a very broad IT landscape that connects a lot of systems together. Hence, it is difficult to change the architecture because it requires sequential adjustments in all systems.

Skills dimension is rated at the high level 4.14. The organization encourages innovative mind-set in employees, and staff is given the opportunity to learn about other functions across the organization. Additionally engagement in IT outsourcing activities provided a possibility to redirect the staff of IT department on the areas they are more skilled in. Also they had a time to learn more about in-house services and focus on their delivery.

Employee engagement alignment is assessed at the highest score of 4.88. The respondent has high satisfaction with his work and pride in his employer, the employee has the perception that the company values what he brings to the table.

Technology scope is rated at the level 3.41. In comparison with other information systems, inter-organizational systems harm the total score. They support negotiation with customers and suppliers at the moderate level 3.

### **IT outsourcing:**

Information technologies and services are located in the core of the business. However, the company prefers to keep most of IT functions internally. The customers and operations data are the most precious resource of a financial organisation. The data should be treated with care and protected as much as possible, hence no data is stored in the cloud. *Company B* outsources infrastructure maintenance and IT consulting services to the external suppliers. The company maintain relationships with several outsourcing vendors. Also it uses software-as-a-service model and outsources several customer applications in the cloud.

IT outsourcing maturity is at the level 3.25. Outsourcing strategy is well aligned with business goals and contains expected outcomes. For large companies the preparation step is crucial. Therefore, the process of provider selection was done thoroughly and carefully. Contract is very detailed and describes formal procedures in the case of violations.

Performance of service provider and quality of services are measured upon several tollgates. The provider might pass them all to ensure appropriate level of delivered quality. Otherwise, the contract is terminated. Relationships with outsourcer are mainly based on the contract, personal connections are not supported.

The dangers and risks inherent in the financial system make risk management essential components of the processes in the financial sector. In *Company B* risk management is performed as the continuous process – risks are elaborated in the beginning of the project and monitored and adjusted in due course.

### **Lessons learnt:**

Alignment:

- Strategic goals for transformation should be explicitly formulated by senior management and communicated to all employees.
- Business and IT teams should determine company's strategy together, then the broader perspective is acquired.
- Business strategy should consider the impact of IT goals and strategies.
- The value of IT projects should be determined by both sides.

#### Outsourcing:

- Companies with sensitive data are not willing widely use cloud computing services.
- Preparation step is crucial, it will be more costly and problematic to change provider later.

### 6.3.3 Results Company C

#### Business-IT alignment:

The alignment maturity score of *Company C* is presented on Figure 8. The BIA maturity score of *Company C* is 2.46.

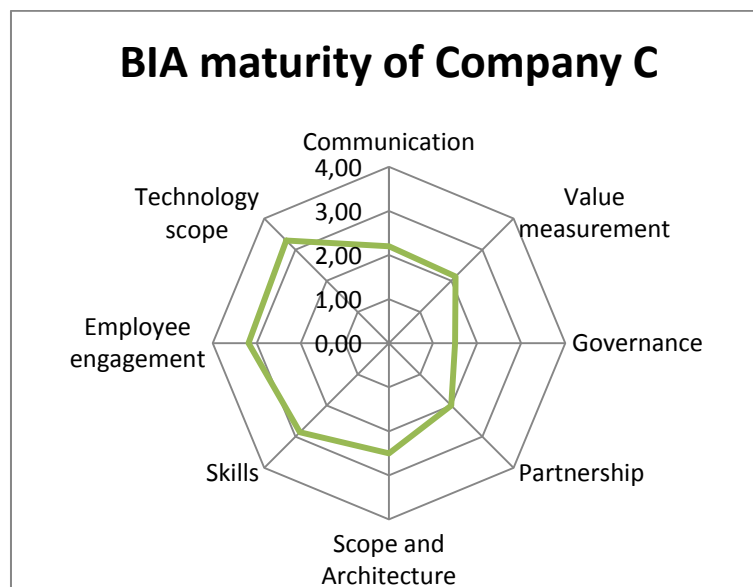


Figure 8. BIA maturity score in Company C

The communication dimension is assessed at level 2.20. IT is not involved in business decisions. Knowledge is not shared within business and IT teams. Communication style is formalized and directive. With respect to communication the minor things do not require

formal procedure and the needed person can be approached directly while more significant requests (e.g., change firewall) might to be done with the usage of the formal process.

The Value measurement criterion is at the level 2.14. It means that IT is perceived as the cost centre rather than investment and profit centre. Governance criterion is ranked at the lowest level of 1.50. IT management does not have impact of business strategic planning. The decision-making authority is not clearly defined. There is no discussion and revision of priorities, as well as allocation of IT resources is not defined explicitly.

Partnership dimension is assessed at the level 2.00. IT is considered as an asset, however there is a lack of trust and IT takes most of risks. Scope and Architecture dimension is at the level 2.50. It implies that IT is not fully integrated but there is a good progress in this direction. Skills are rated at the level 2.86. From the good points, the employees have the opportunities learning about functions outside their area of responsibilities, the company is open for changes and IT management is result based. Some other areas should be improved: innovative mind-set should be more encouraged by the senior management; locus of power is fully dependent on the organizational functions, instead of across all organization.

Employee engagement is assessed at the relatively high level of 3.19. This score represents that employees are committed to the Company and associate their own success with company's achievements. However, based on the results of questionnaire senior management should deliver information about occurring changes and customer satisfaction in unambiguous way. It is important for regular employees know that the clients are satisfied with the quality of services and products.

Technology scope is ranked at the highest level out of all eight dimensions. It means that information systems support decision making process and provide facilities to negotiate with clients.

### **IT outsourcing:**

Primarily IT related activities are not outsourced. The company outsources backup solutions in the cloud. The maturity of IT outsourcing activities is at the level 2.36. Outsourcing strategy is not fully aligned with business objectives, and the monitor and control functions should be improved. The rest of factors are mostly at the level 3 which shows that they are managed but more efforts should be directed to these areas in order to make them contributing in ITO success.

### **Lessons learnt:**

- Business-IT alignment is a continuous process. The designed plans should be assessed over time and steps to be corrected.

- Improving business-IT alignment is a stepwise approach. If the strategy of increasing alignment is too radical, neither business people nor IT team will accept it.

### 6.3.4 Results Company D

#### Business-IT alignment:

IT is not involved in the discussions at the strategic level and has no influence on the business decisions. Conversely, it performs only technical functions and is associated only with first-line support services. On the other hand, IT team is willing to contribute to the business decisions. Also business realizes the necessity of improving alignment. Business sees the need to change the perspective of IT from a cost centre to a value contributor. The business management understands that they should improve alignment pretty fast if they want to see IT as a neighbour in few years instead of command and control function.

The score of each maturity dimension for *Company D* is shown on Figure 9. The current BIA maturity score of *Company D* is 2.15. The numerical results from questionnaire are consistent with the information derived from interview.

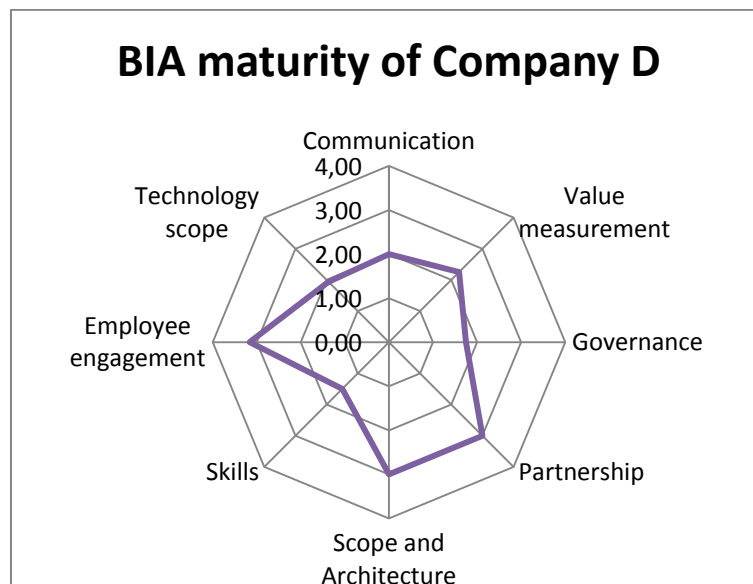


Figure 9. BIA maturity score in Company D

The communication is assessed at level 2. There is clearly a lack of communication between business and IT. Both sides have limited awareness of its goals, plans and functions. The style of communication is defined as Command and Control. Another area of improvements is the extended input from senior management with respect to the running IT projects.

Value measurement dimension is at level 2.25. IT is seen as a cost centre. Also business and IT metrics are not linked to each other. IT unit actively uses service level agreements which



cover technical indicators, such as response time, availability and service time. These SLAs do not include business-oriented performance metrics. However the business is not aware of them. From business point of view designed SLAs are on the shelf.

Governance criterion is scored low at level 2. The reason likely lays in the fact that local Dutch division has no real governing power. It is transferred to the European headquarter. Also IT does not participate in the strategic business planning at any extent. The problem also can be in the double-management centres: from one side IT is governed locally in the Netherlands while the European headquarter also performs management function. These two centres should be carefully aligned or only one of them should take a leading role.

Partnership dimension is assessed at the relatively low rate of 2.00. Several reasons can explain this score. First of all, command and control nature of relationships between business and IT. Also IT performs only technical and support functions. A positive trend can be noticed because business and IT representatives are willing to build trustful and collaborative relationships with each other.

Scope and Architecture dimension has the second highest level of maturity among eight alignment areas with the score 3.00. The presence of information technologies is very important for running the business, hence IT are greatly used. However, the chosen architecture is not flexible at all, and should be revised in future. It is not an easy and instant task since it influences a lot of modules and systems in place.

Skills dimension is at the level 1.50. This implies that in general company is not ready for changes. Rotation between IT and business functions is not common, and there are very few opportunities to employee to learn about the services outside his functions.

Employee engagement alignment is assessed at the highest level 3.16. This means that company managed to build loyal and solid relationships with employees, and to communicate strategic plans and goals to the lower hierarchy level. The maturity of employee engagement is not very high (level four or five), leaving the room for improvements. For instance, the following areas can be developed: management should be more open to receive feedbacks and hear opinions of the regular employees. The company operates in the electronics and technology market, which can be characterized as very dynamic pace with emergence of new trends constantly. Therefore it is vital to track innovative technologies and implement them in products and services. Additionally, regular meetings of employees to discuss trends and developments should be encouraged. Diversity of educational backgrounds and perspectives foster creativity and result in new innovative ideas.

Technology scope is rated at the level 1.94. It means that currently IT is not helping to business. There are problems with receiving value from ERP system. This score is consistent with overall situation. IT systems do not make contributions to the business success, while

ideally IT should drive business changes. The management should better align capabilities and functionality of existing information systems with the purposes of their implementation.

### **IT outsourcing:**

In *Company D* outsourcing suppliers are strictly controlled by the European IT department. Outsourced activities include application maintenance and support, infrastructure maintenance, helpdesk, desktop support, end user devices management. Locally only IT staffing and the document collaboration cloud services are outsourced. While other IT services are outsourced to the European vendors and governed by European headquarter.

The maturity of IT outsourcing activities is at the level 3.25 which can be considered high. One of the possible reasons of high score of ITO activities is that document management is the most frequently used cloud service. The outsourcing is easy to manage and control in this case. Outsourcing strategy is moderately well aligned with business objectives and explicitly formulates the goals and outcomes to achieve. Contract management is rated at the level 4. In the beginning a lot of attention was paid to the contract outline. Well-thought-out contract helps to manage relationships with vendor on the professional level and save a good collaboration since all penalties and expected levels or services are written down.

The monitoring and controlling actions are the part of ITO activities. Since the business changes constantly, requirements should be in the line with updated strategies and goals. Relationship management factor is rated at level 2. It implies that the company does not promote establishment of trustful and loyal relationship with vendor, considering him only as service provider. This factor should be improved because promoting social relationships and establishing friendly loyal contact helps to enhance beneficial cooperation.

The company defines quantifiable performance metrics and formulates them in the form of service level agreements. The accomplishment of these levels by vendor is monitored in accordance with the contract. The knowledge and expertise are shared with vendor, which can impact positively in to relationship factor.

### **Lessons learnt:**

#### Alignment:

- Only one governance centre should exist.
- Only when both business and IT sides realize the need of changes, the alignment can be improved. It is a two-way notion.
- Direct personal communication between business and IT teams fosters alignment.
- Regular meetings and feedback sessions positively influence alignment.

- BIA is greatly harmed by disability of information systems to perform the goals of its existence.

Outsourcing:

- Partnership and collaboration with vendor is vital for ITO success.

## 6.4 General findings

This section presents the summarized results. Findings of this section are built upon qualitative data from four interviews, and quantitative data from seven filled-in questionnaires – four received from the respondents of case studies and three surveys. Since the findings are based on the limited amount of data they should be considered with caution. Nevertheless, they provide interesting observations and can draw attention of researchers.

Questionnaire was used to derive scores of BIA and ITO in companies, but the maturity of questionnaire itself is at the preliminary stage. One of the goals of the validation part is to revise the questionnaire and receive feedback from interviewees. Afterwards being improved it can be used in the survey method. In the survey method questionnaire is the main source of data collection, and properly constructed questionnaire is crucial for success of the research.

Firstly, findings with respect to business-IT alignment are described, followed by conclusions regarding IT outsourcing activities. The next section investigates the correlation between BIA and ITO scores. This data presents an opportunity to formulate hypothesis about the impact of ITO on BIA maturity level. The chapter concludes with the reflection on the designed model.

Case study companies' overview was presented in Section 6.3. Table 8 outlines the overview of the survey companies.

Table 8. Overview of the survey companies

<b>Company</b>	<b>Survey 1</b>	<b>Survey 2</b>	<b>Survey 3</b>
<b>Criterion</b>			
Industry	Technology	Energy	Technology
Number of employees	1-50	2000+	50-200
Function of the respondent	IT	Business	IT
Role of IT	Critical	Very important	Critical

### 6.4.1 Business-IT alignment

The analysis of the BIA maturity scores reveals several interesting patterns. These patterns are supported by the information derived from the interviews. The scores of BIA dimensions and overall maturity score are presented in Table 9 under the left “Current” part. The left side of the table shows the scores of each dimension with the overall calculated maturity score in the last row. The right side of the table presents the deviation value of each dimension with respect to the overall maturity score. Overall maturity score is calculated as the average of all eight dimensions. Hence, in simple words numbers in right side of the table are the difference between the score of dimension and the average of all dimensions per company. In order to make the table more visually understandable all positive numbers are highlighted with green colour.

1. In the majority of cases (five out of eight, or 62.5%) the score of *Skills* dimension is very high. Consistently in four cases it has the second highest value out of eight dimensions and in one case it has the third place out of all dimensions. These results are consistent with findings of Thorogood (Thorogood, A., Yetton, P., Vlastic, A., & Spiller, J., 2004) who reported that selective IT outsourcing helps to overcome skills shortages and improves the skills aspect of alignment.

Commonly companies outsource services when they lack of skills required to deliver a service with the high level of quality. Outsourcing to someone who specialises in the delivery of this service can improve the quality of that service by improving final output quality or directing the internal staff for other roles they are skilled in. This conclusion is supported by the information from the interview with *Company B*. The respondent said that engagement of IT outsourcing activities had a positive impact on the Skills dimension of alignment.

2. A significant pattern can be noticed with respect to the *Employee engagement* dimension. The employee engagement score is the highest in five cases and the second highest in two cases. Also consistently over these seven companies, the score is higher than the overall maturity score in the individual cases. It can be seen in the row of *Employee engagement* of the right part of the table where all values in the row are positive (highlighted with green).

This pattern can be explained by the fact that questionnaire was filled in by managers and executives. Managers in general are more aware of strategies, strategic goals and plans of company. Also managers are more responsible for the success of the company, feel more loyal and committed. On the other hand, such a remarkable pattern could indicate that perception of the top managers is biased; probably they only assume that employee engagement is high even though it is not the truth. More realistic data could be received from the regular employees. In the future research the newly added dimension of employee engagement should be addressed by a regular employee.

Table 9. Maturity scores and deviations

Company Dimension	Current							Deviation from Maturity score						
	Comp A	Comp B	Comp C	Comp D	Survey 1	Survey 2	Survey 3	Comp A	Comp B	Comp C	Comp D	Survey 1	Survey 2	Survey 3
Communication	3,00	3,33	2,20	2,00	3,17	2,17	3,00	0,17	-0,46	-0,26	-0,33	0,12	-0,08	0,13
Value measurement	3,00	4,00	2,14	2,25	3,29	1,71	2,43	0,17	0,21	-0,32	-0,08	0,24	-0,54	-0,44
Governance	2,83	3,17	1,50	1,75	3,00	1,83	2,00	0,00	-0,62	-0,96	-0,58	-0,05	-0,42	-0,87
Partnership	2,00	4,00	2,00	3,00	2,80	1,80	2,60	-0,83	0,21	-0,46	0,68	-0,26	-0,45	-0,27
Scope and Architecture	3,60	3,40	2,50	3,00	2,83	2,17	3,25	0,77	-0,39	0,04	0,68	-0,23	-0,08	0,38
Skills	3,00	4,14	2,86	1,50	2,57	2,86	3,29	0,17	0,35	0,40	-0,83	-0,49	0,61	0,42
Employee engagement	3,03	4,88	3,19	3,16	3,72	3,25	3,41	0,20	1,08	0,73	0,84	0,67	1,00	0,54
Technology scope	2,18	3,41	3,29	1,94	3,06	2,24	3,00	-0,65	-0,38	0,83	-0,39	0,01	-0,01	0,13
BIA Maturity	2,83	3,79	2,46	2,33	3,06	2,25	2,87							

3. Another interesting pattern arises from the analysis of Table 9. It highlights that *Governance* score is lower than the overall score per case. *Governance* dimension represents such important components of business-IT alignment as the extent of IT participation in strategic business planning, whether IT is seen as cost or investment centre and how IT projects are prioritized. Companies A and D have a low score of *Governance* dimension. The interviews revealed that in these companies IT department does not participate in strategic planning and seen as supplementary function to business needs. In comparison, in *Company B* *Governance* is at the high level of maturity, because IT contributes to the business strategies and plans, and projects are selected from the right perspective – best value for customers.
4. Table 10 shows current and desired levels of alignment. The respondents were asked to define current level of each attribute and the level which they would like to reach in two years. It is compelling to see that none of the companies expect to reach level 5 in two years, realizing that shift to the next level is a process that requires number of modifications and steps. Four case study companies during the interviews reported that they realize the importance of alignment and are conscious of the possible difficulties. In their opinion, the change of the IT perception as a support function to the full-fledged member of strategic business process does not happen instantly.

Table 10. Current and desired BIA levels

Level \ Company	Comp A	Comp B	Comp C	Comp D	Survey 1	Survey 2	Survey 3
Current BIA level	2,83	3,79	2,46	2,33	3,06	2,25	2,87
Desired BIA level	4,31	4,67	3,84	4,25	4,03	3,90	4,28
Difference = Desired - Current	1,48	0,87	1,38	2,12	0,97	1,64	1,40

The studies of ((Biberoglu, E., & Haddad, H., 2002); (Paulk, M. C., Curtis, B., Chrissis, M. B., & Weber, C. V. , 1993)) report that it takes in average two years for an organization to move from one level of maturity to the next higher one. The findings of the empirical study are consistent with these results to a certain degree. In average, leaving out the results of *Company D*, companies target to reach the level higher by 1.29 points.

Only *Company D* targets to reach the alignment maturity level of 4.25 which is by 2.12 points higher than the current one. The explanation was provided in the interview with the director. He stated that both business and IT conceive that IT does not help to business. In the aspect of alignment the company goes behind their expectations and might improve quite fast in order to turn the IT function in a mature partner.

5. In the beginning of the questionnaire respondents were asked to determine at which level of alignment maturity the company is currently associated. The results could be found in Table 11.

Table 11. Perceived vs. real BIA maturity level

Company Level	Comp A	Comp B	Comp C	Comp D	Survey 1	Survey 2	Survey 3
Calculated BIA level	2,83	3,79	2,46	2,33	3,06	2,25	2,87
Perceived BIA level	4,00	4,00	3,00	2,00	2,00	2,00	3,00

All companies, except results of *Company A*, are realistic about the maturity of relationships between business and IT teams. In each of the interviews the respondent did not present the situation in the favourable light, instead being rather critical and objective.

From the interview with *Company's A* respondent it was possible to conclude that the calculated alignment score does not fully reflect the real situation within the organization. *Company A* works in supply-demand style when business is driving IT decisions, and IT supplies business needs. To some extent this contradicts with the definition of BIA formulated by Campbell (Campbell, 2005) who defines alignment as business and IT working together to reach a common goal. In *Company A* IT side does not have a seat on the table and does not participate in strategic business planning. On the other hand, according to definition of Reich and Benbasat (Reich, B.H. & Benbasat, I., 1996) alignment occurs when business objectives and plans are supported by the IT strategy. Based on this definition *Company A* has a very high alignment level since business goals and the information technologies that support them remain in harmony. The company is advanced with respect to the use of various out-of-the-box management decisions and practices, such as aligning business and IT at different levels, adopting Scrum methodology for overcoming alignment issues and establishing Change management board.

Generally speaking, it is a good sign that the companies recognize the real level of maturity. In this situation the problems are seen in the right perspective, and it is more clear which steps for improvement should be undertaken.

6. Table 12 reveals an interesting observation which connects communication level and size of the company.

The data show that communication level is higher in smaller companies. This observation is consistent over the six companies out of seven, which is roughly 85%. It could be likely explained by the fact that in larger companies there is more formality in place and protocol to follow, including communication. In small companies communication style is more relaxed and free because employees have a face-to-face communication on a daily basis. In

small companies it is easier to approach the person directly, while big companies imply formal channels of communication, for instance through e-mails.

Table 12. Communication level and size of the company

Company Criteria	Comp A	Comp B	Comp C	Comp D	Survey 1	Survey 2	Survey 3
Communication	3,00	3,33	2,20	2,00	3,17	2,17	3,00
Size of the comp.	50-200	2000+	2000+	500- 2000	1-50	2000+	50-200

This observation found support in the interviews. For instance, in *Company A* employees know each other and the personal relations help to overcome conflicts and solve issues. In comparison, communication style in *Company C* is formalized, and requests might be solved with the usage of formal protocol and formal communication channels.

- One of the questionnaire questions asked the respondents to evaluate the definition of BIA formulated by Maes (Maes, R., Rijsenbrij, D., Truijens, O., & Goedvolk, H., 2000) and selected as the ground definition of alignment in the current work.

It should be recalled that Maes defines business-IT alignment as the continuous process, involving management and design sub-processes, of consciously and coherently interrelating all components of the business – IT relationship in order to contribute to the organisation's performance over time.

Six out of seven respondents agree that this definition fully reflects the concept of business-IT alignment. One respondent proposed that business-IT alignment activities should have its goal not only increasing of organizational performance, but also consider type of the value the organization offers to its customers.

Kofi (Kofi, 2006) argues that performance measurement is aimed at achieving conformance of the work product or service to the customer's requirements. Nowadays many organizational performance management systems utilize some of the new approaches such as Balanced Scorecard, Total Quality Management or best practice benchmarking (Salem, 2003). Most of them do not focus only on profitability measures, but include customer component as well. For instance, the balanced scorecard approach includes multiple measures aimed at financial performance, internal business processes, customer perspectives and innovation and learning (Kaplan, R. S., & Norton, D. P., 1996). The aim is to increase attention to wider aspects of organizational performance (not only financial performance).



## 6.4.2 ITO relationships

The collected data provide the possibility to observe findings with respect to IT outsourcing.

1. It is valuable to investigate what reasons drive the decision to outsource services to the external provider. The selected reasons are presented in Table 13.

Table 13. Reasons of outsourcing

Company Reason	Comp A	Comp B	Comp C	Comp D	Survey 1	Survey 2	Survey 3
Cost reduction	✓			✓	✓		✓
Focus on core competencies	✓	✓	✓	✓	✓	✓	✓
Access to expertise and knowledge				✓			✓

The main reason of outsourcing is the possibility to focus on core competencies. Companies that outsource certain routine functions to the external experts are capable of focusing on delivery of their core services into the market, for instance financial services in the case of *Company B* and consulting activities in the case of *Company C*.

It could be seen that big companies are less concerned with cost reduction than medium and small companies. The reason here lays in the available budgets of enterprises versus small companies. Access to expertise and knowledge is less prioritized among the outsourcing reasons. For large companies it is not an impediment since if needed the company can hire an expert in the specific field. And for small companies this is not the priority because they are more concerned with cost reduction and savings.

During the interview one of the respondents specified scalability as the reason that drove cloud outsourcing decision in his company. Scalability is certainly a very important benefit of cloud computing because business needs and requirements always keep changing. In order to react properly to these changes the companies need to respond rapidly and being able to scale IT requirements to the size and needs of the business. It is faster and more efficient to access hosted services rather than purchase and install new IT equipment such as servers, expensive desktop units and bandwidth consumption.

2. One of the questionnaire questions was related to the performance metrics used to assess outsourcing provider. The data is presented in Table 14.

Table 14. Performance metrics in IT outsourcing

Company Metrics	Comp A	Comp B	Comp C	Comp D	Survey 1	Survey 2	Survey 3
Financial	✓	✓	✓	✓		✓	✓
Service quality	✓	✓		✓	✓	✓	✓
Creative solutions							
Relationship		✓		✓	✓		✓
Strategy			✓				
Growth							

Financial metrics include such indicators as total cost of ownership, cost per transaction or per employee, etc. Service quality covers reliability, availability, delivery speed, response rate, etc. Relationship consists of communication, problem solving, conflict resolution, positive interaction, etc. Strategy is related to alignment of goals and vision by parties, meeting outsourcing objectives, benefits and competitive advantage. Growth is understood in terms of training and improvement programs, increase in employee efficiency, etc.

It could be seen that most of companies use financial and service quality metrics. The importance of financial metrics is related to the one of the main reasons of outsourcing, namely cost reduction. After outsourcing in-house activities to the external provider the company wants to evaluate feasibility of this decision, and see whether it is more profitable or hidden costs were not taken into account.

In IT outsourcing in general and in cloud computing in particular maintenance of service quality characteristics on the specific level is especially vital. Usually service quality levels are stated in the contract and are the subject of penalties.

However, financial and service quality metrics measure mostly operational part leaving out such components as compatibility of strategic goals or focus on growth possibilities. Also external vendor is not seen as the partner who can propose innovative and creative solutions for the business but only as the supplier of services. Innovation should be one of the objectives in an outsourcing relationship.

### 6.4.3 Relationship between ITO and BIA

This section analyses the data with the goal of finding the correlation between BIA and ITO scores. This analysis is built upon the data received during the interviews and data from questionnaires. The analysis of the qualitative data per interview is presented in Section 6.3; while Table 15 summarizes the overall measurement results of the seven companies (recall: questionnaires from four case study companies and three surveys).

Table 15. BIA and ITO maturity levels

Company Score	Comp A	Comp B	Comp C	Comp D	Survey 1	Survey 2	Survey 3
ITO maturity score	2,58	3,92	2,36	3,25	3,16	1,90	3,06
BIA maturity score	2,83	3,79	2,46	2,33	3,06	2,25	2,87

It has become clear that the gathered data is not enough to distinguish cloud computing outsourcing and outsourcing of other IT services. The fact is that cloud is a relatively new paradigm and companies start by using it for less critical areas of technology before getting more comfortable with it over time. As such, most of the companies combine traditional outsourcing and cloud outsourcing. Combination of different outsourcing services allows study the impact of ITO on business-IT alignment level in general without scoping to cloud computing services. To overcome this difficulty, it is necessary to scope the future research to companies with only cloud computing outsourcing.

The information from the interviews showed that companies with more mature IT outsourcing activities have higher alignment between business and IT. First of all, interviews revealed that IT outsourcing *has* an effect on alignment in the organisations. Companies had to realign business and IT plans and goals, as well as reconsider strategies and management practices. *Company B* showed the highest score of alignment and IT outsourcing maturity. The interview displayed that the company is aligned across eight dimensions as well as ITO factors are elaborated thoroughly. For example, the main focus was at the preparation step, after careful provider selection and preliminary actions it was easier to build stable relationships having a solid background. Also performance management has established practices based on tollgates. With respect to BIA, *Company B* is the only company where IT fosters discussions on the same basis as business side. *Company's* strategies are formulated with the equal participation of IT and business teams. IT outsourcing had a significant effect on the Skills dimension. Running IT like a business aligned IT and business strategies in order to maximize the contribution that IT can bring to the overall enterprise.

*Company A* has lower level of alignment as well as level of IT outsourcing is less mature. Contract management factor is ranked very low at the level 1; also ITO strategy was not thought-out carefully and currently presents an obstacle in negotiation with service provider. Though relationship management reached high level and is currently evolving to the partnership stage. The level of internal alignment is lower than in *Company B*; likely it could be explained by the supply-demand nature of relationships between business and IT. This style implies the directive communication when IT responds to business's requests without taking part in discussion of the value of the project and whether it contributes to the goals of IT department itself.

*Company C* also matches the tendency: it has less mature ITO and lower score of BIA. In general, IT outsourcing is not managed appropriately, all factors are ranked neutrally meaning that no success achieved in any of them. More actions should be taken to align business and IT as well. It was reported that IT is perceived as a cost centre, whereas the objective should be to transform IT department from a cost centre to a value centre.

It could be seen that *Company D* does not belong to the trend. It has high IT outsourcing maturity score but the alignment level is the lowest among four companies. The reason was explained in Section 6.3.4. The level of IT outsourcing is high in this company because locally only IT staffing and document collaboration services are outsourced, while the rest is controlled by the European headquarter. These services are relatively easy to manage. Alignment is very low because currently IT performs only technical functions and does not participate in the discussions at the business strategic level. Partnership and communication are almost absent which makes process of achieving alignment even harder. The good sign is that both business and IT realizes that alignment should be improved.

The analysis of interviews shows consistency between the information received during the interviews and scores calculated from questionnaires. The companies with more mature IT outsourcing activities have more mature alignment.

The analysis of the qualitative data from interviews is supplemented by the mathematical analysis of the quantitative data from questionnaires. Some discrepancy can be seen in the applying of the statistical analysis to the small sample set of seven subjects. It has to be recalled that seven subjects is too small sample set and does not allow drawing statistically valid conclusions. Therefore the values of mathematical analysis should be interpreted with caution. Nevertheless these results show the tendency and reveal interesting observations. Another point is that this analysis outlines the approach which can be directly applied in the future research.

The results of the seven questionnaires are plotted in the graph in Figure 10. On the graph blue dots represent data from the case study and red dots outline data from survey. Visualization of data allows making fast, accurate judgements and patterns recognition. Visual examination of the scatter plot shows the positive correlation between two variables. The graph suggests that higher ITO level correlates with higher BIA score. Numerical justification follows below.

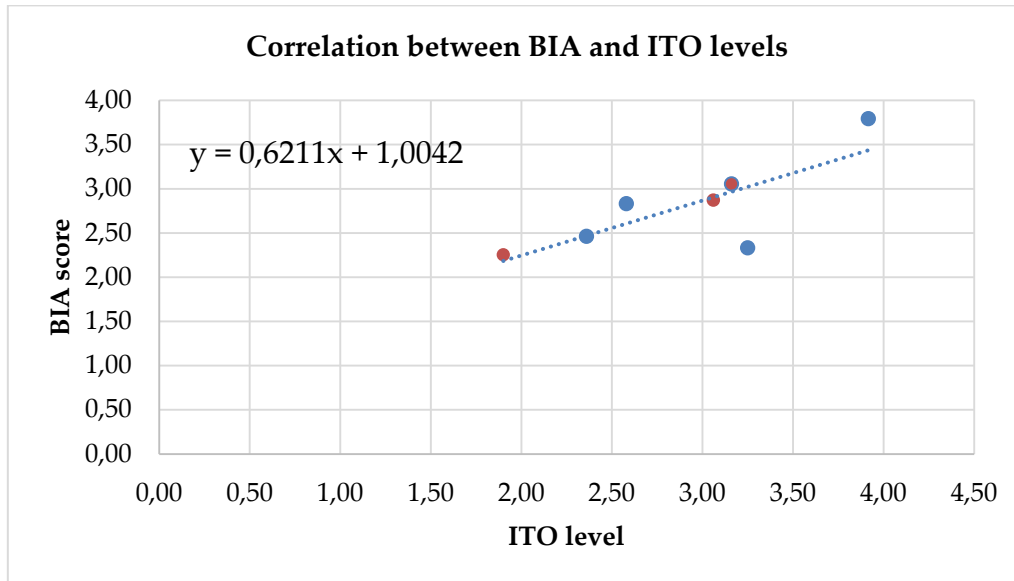


Figure 10. Correlation between BIA and ITO levels

The detailed description of the mathematical rationale can be found in Appendix N. It provides explanations of the steps of mathematical analysis and can serve as a guideline for future research. Below only the most significant steps are presented.

Linear regression is a way of estimating the relationships between two variables. The functionality of Excel was used to build regression line and find the most appropriate values for variables in the linear regression equation. The equation is shown in Figure 10. The value of slope is 0.6211. It means the following: if ITO maturity level increases by one point then the model predicts that BIA maturity score will increase approximately 0.62 points. In terms of business-IT alignment improvement by 0.62 points could be considered as a significant leap. On the other hand, it is challenging task to improve ITO score by one point. For achieving this improvement company should work upon all factors, namely elaborate more thought-out outsourcing strategy and align it with business goals, build beneficial relationships with provider, establish performance management policy, etc.

However, the sample set is too limited to generalize behaviour of the regression and provide statistical generalization. It is probable that the coefficients in the equation will change on addition more subjects to the data set.

Correlation coefficient is another technique that can provide interesting insights in the results. Correlation coefficients are used to measure strength and the direction of a relationship between two variables. Pearson's correlation coefficient is a measure of this linear relationship. Pearson's correlation coefficient is denoted with  $r$  letter. The  $r$  value can be between +1 and -1 inclusive, where 1 is total positive correlation, 0 is no correlation, and -1 is total negative correlation.

Functionality of Microsoft Excel was used to compute value of Pearson's coefficient and confidence intervals. The results are presented in Table 16.

For population of seven subjects level of significance of 0.05 equals 0.754. This value is the minimum correlation coefficient needed in order to confidently state that 95 times out of a 100 the relationship found with 7 subjects exists in the population from which they were drawn.

Table 16. Pearson's correlation coefficient

r	n	Level of significance ( $\alpha$ )				Confidence level			
		0,1	0,05	0,02	0,01	90%	95%	98%	99%
0,7716	7	0,669	0,754	0,833	0,874	valid	valid		

Pearson's correlation coefficient is equal 0.7716. The Pearson's coefficient is above 0.754 ( $\alpha = 0.05$ ) but below 0.833 ( $\alpha = 0.02$ ). It means that it could be reported that the relationship exist with 95% confidence but not strong enough for 98% confidence.

The correlation of 0.7716 between ITO level and BIA score tells that:

- The relationship is positive. If ITO score increases then BIA score increases as well.
- The correlation is high enough for achieving at least a 95% of confidence.

Pearson's coefficient is used to test the null hypothesis. Null hypothesis states that IT outsourcing level has no effect on the alignment level. The aim is to reject the null hypothesis and accept the alternative hypothesis that an effect exists. Hypothesis testing is conducted in the series of steps. The detailed description of all steps can be found in Appendix N.

The absolute value of the calculated Pearson's coefficient ( $r = 0.7716$ ) is above the critical value  $r_{crit} (\alpha=0.05) = 0.754$ .

Consequently the null hypothesis (there is no relationship) can be rejected and alternative hypothesis accepted. Alternative hypothesis states that there is a relationship between ITO level and level of internal business-IT alignment.

Linear regression equation revealed positive slope of the regression line which matches with the calculated Pearson's coefficient ( $r > 0$ ). In such a manner it is *not* claimed that the linear equation will explain all further possibly collected data but it could be stated that the correlation is definitely positive.

Case study research is especially vulnerable to criticism regarding limited generalizability, given the small sample set (Mookherji, S., & LaFond, A., 2013). However, the goal of the present research is not statistical generalization, but analytic generalization. In analytic generalization case study results lead to the formulation of hypothesis that can be tested with the greater sample set. Taking into account the limited number of cases, the calculated business-IT alignment and IT outsourcing maturity levels form the basis to formulating hypothesis about effect of ITO on BIA. The hypothesis is stated as follows:

IT outsourcing has a positive impact on the level of business-IT alignment.

It was noted in the beginning of this section that these findings are not specific to the cloud computing outsourcing. However, cloud computing can be seen as a type of IT outsourcing, hence the found results could be an indication that cloud computing has a positive effect on the internal alignment level as well.

#### 6.4.4 Relation to the previous studies

Chapter 3 presented extensive literature analysis and showed that several authors explored the relationship between IT outsourcing maturity level and business-IT alignment maturity score. The formulated above hypothesis is in good agreement with the findings of Pollalis (Pollalis, 2003), van Lier, J., & Dohmen (van Lier, J., & Dohmen, T., 2007) and Derksen (Derksen, 2013) who also reported that ITO has a positive effect on BIA. It could be interesting to compare the results and approach of the current research with the findings of existing works.

Pollalis applied survey research method and based his findings on the data derived from 127 commercial banks. The author constructs the model for measuring business-IT alignment examining three types of integration that impact the performance of organizations: technological integration, functional integration and strategic integration. His model did not prove to be scientifically valid. In the present research the modified model of Luftman was used to measure maturity of alignment. The Luftman's model is intensively used by scientists in their research (e.g., (Khanfar, M., & Zualkernan, I. A. 2010), (Ekstedt, M., Jonsson, N., Plazaola, L., Silva Molina, E. J., & Vargas, N. 2005)). Such a comprehensive application of the model proves its validity for scientific research. Additionally Pollalis does not measure IT outsourcing maturity instead separating companies in four clusters based on the criterion of "effectiveness of outsourcing". This separation is drawn on his observations. This approach can not be considered reliable and limits repeatability of the research.

Derksen used a survey method and processed results of 273 companies. He concluded that there is a small but significant correlation between BIA maturity and Degree of ITO. The

calculated correlation coefficient  $r$  equals 0.227 (recall: in the current work  $r = 0.7716$ ). Also he used the classical Luftman's model while in the present research it was extended with two additional dimensions.

Van Lier & Dohmen found that in companies with a higher level of strategic alignment more benefits are achieved. He applied case study method with three companies. The Luftman's model is the instrument for measuring alignment level in his research; however the author changed the approach proposed by Luftman. The alignment in the company was evaluated by the external observer instead of business or IT executives within the company. Undertaken approach could possibly disrupt the results because external observer is not fully aware of the situation within the company. The external observer can report organizational structure and make his conclusions about degree of information technologies usage, but he cannot assess the level of personal interaction or know the degree of knowledge sharing. IT outsourcing success is measured in terms of benefits achievement. Respondents were provided with a list of often observed outsourcing benefits and asked to judge the importance of each anticipated benefit. However, the author does not present this list in the paper, which makes it impossible to repeat the results and test reliability of the research.

In comparison with studies of Pollalis and Van Lier & Dohmen the present work explicitly justifies all choices and can act as the guide for the repeatability tests. Repeatability is a part of the reliability check. Additionally, contrary to the work of Van Lier, the research was supported by interviews and questionnaires with managers.

The present research applied case study research method. The results clearly demonstrate that this method allows comprehensive investigation of situation and understanding the essence of relationship. Interviews revealed a great number of interesting points that could not be captured only with questionnaire. From this point of view, the interviews appear to be the invaluable source of information.

The trade-off exists between sample size and depth of investigation. It is partially reflected in the constant opposition of case study and survey research methods. On the one hand, case study method enables in-depth exploration but does not make possible statistical generalization taking into account limited number of cases. On the other hand, survey provides more confident statistical model with large sample set but lacks of deep research of the subjects involved. The solution can be found in the compromise – include relatively big number of cases that could show a firm trend but make enquiry that all of them represent the same situation. The overly comprehensive interviews can be excluded but still it is important to assure that results are not harmed by extreme cases.



### 6.4.5 Formulation of hypotheses

The major hypothesis of the current research was formulated in Section 6.4.3. It states that IT outsourcing has a positive impact on the level of business-IT alignment. Besides this statement, identified observations from the analysis of data offer several other hypotheses. Similar to the main hypothesis and given the explorative nature of the current research, these hypotheses are not supported by the statistical evidence but suggest directions for the future research with larger number of companies.

H1: The score of Communication dimension of the business-IT alignment is higher in smaller companies.

The results of the empirical investigation show that companies with less number of employees achieved higher score in the Communication dimension of the alignment model. In small companies it is easier to approach a colleague directly and arrange a face-to-face meeting. People tend to have higher level of personal interaction, whereas personal connections decrease barriers and produce more cohesive collaboration.

H2: Managers assess the level of employee engagement higher than the regular employees.

The results of the seven questionnaires suggest that senior managers tend to estimate the level of employee engagement in a brighter light than it is in reality. This hypothesis should be tested in the future research when managers and regular employees answer the same set of questions about employee engagement. It is interesting to compare their scores.

H3: Adoption of agile project methodologies (such as Scrum) positively influences the alignment between business and IT.

The philosophy of the agile project methodologies places a new emphasis on the communication and collaboration between stakeholders (business side) and developers (IT side). In the end of each project iteration stakeholders and IT team members meet to assess the progress of a project, plan its next steps, and align goals and expectations. Such aspects as respect to each other, truth in the communication, transparency, trust and commitment underpin the agile paradigm. To foster these values team should be aligned around the common goals and work in the close collaboration.

Agile paradigm goes in the line with business-IT alignment principles, consequently the proposition is that implementation of the agile methodologies impacts the success of the alignment between business and IT.

H4: IT outsourcing positively influence Skills dimension of BIA.

One of the most common reasons of IT outsourcing is the access to the technology and skills needed to support business objectives. If the company does not have sufficient skills and resources, or alternatively capital to invest in it, outsourcing could be the answer. IT outsourcing potentially improves Skills dimension in the way that internal personnel performs duties that it is skilled. Also, the company does not carry additional unproductive staff which in turn improves overall skills dimension.

H5: Smaller companies are more willing to be engaged in the ITO relationships.

The results show that big companies are less engaged in the IT outsourcing activities, especially in the cloud computing outsourcing. It could be explained by the desire to protect sensitive data and minimize risks associated with IT outsourcing. In this situation the company is not willing to expose the data to the external party. Another explanation is that large companies have more budgets allocated to the IT services. Then they can invest it in the hiring of skilled professional based on the demands instead of outsourcing services.

H6: Presence of the outsourcer' staff positively influences IT outsourcing relationships (through direct communication, shorter response time, etc).

The interviewers reported that physical presence of the outsourcer personnel creates more stable relationship. The communication by phone and e-mail creates delays in the problem solving process. Usually personal talk makes things more clear, as well as encourages discussion and cooperative approach. This item is reflected brightly in the complex issues which require input from multiple people. In this situation the correspondence back and forth with all involved parties can be very time consuming.

H7: Companies which performed careful and extensive selection of the IT outsourcing provider have higher IT outsourcing maturity.

The interviews outlined that preparation step is frequently underestimated. Whereas the careful selection of vendor based on the set of pre-defined factors is the best guarantee of the beneficial relationships. The company should assure that potential provider has required expertise and knowledge, has good references from the clients and an innovative potential, and last but not least is easy and pleasant to deal with. In future the need to change the provider can create more risks and require more financial and physical resources.

H8: Cloud computing has a positive effect on the alignment level.

The results of the thesis allowed drawing a conclusion that IT outsourcing has a favorable influence on the level of internal alignment. However, the received data was not sufficient to scope conclusions to the cloud computing outsourcing. It is probable that cloud computing,

as a specific type of IT outsourcing, has a similar effect. This effect should be studied in the future research.

#### 6.4.6 Reflection on the designed model

One of the goals of empirical study was to evaluate the proposed model for applicability in the practical conditions and gather recommendations for improvements. During the interview respondents were asked to express their opinion about the model and questionnaire as a measurement tool. These suggestions are a valuable source of information for the further model modifications.

The respondents concur that a lot of questions regarding business-IT alignment maturity are overlapping each other. The set of questions should be inspected carefully for having the same meaning in different categories. Another suggestion is to construct a shortened version of questionnaire. The designed model is too detailed. It contains a lot of categories which in turn have several subcategories. This modification can increase response rate and willingness of potential respondents to fill the questionnaire. From the good points respondents said that questions are easily understandable and formulated unambiguously.

It appeared that the mechanism of measuring ITO maturity is too simplified. More factors should be included in the model in order to present ITO concept in the proper way. A respondent proposed the inclusion of new factor for measuring ITO success - incident management. In the case of the incident occurrence the primary goal is to restore normal service operation as quickly as possible and to minimize the impact on business operations. For this direct contact with service vendor should be established. Organizational structure of a company is another important factor of IT outsourcing. If the structure is very massive and the questions rises in the division which is far from IT outsourcing environment side then this question should pass a lot of internal steps before being resolved at the provider side. It creates long waiting time and perception that IT is not able react properly.

This chapter described the procedure of conducting the case study as well as the companies participated in the research. Also this chapter presented the general results of empirical evaluation. These results of the case studies allowed for answering the research questions and accomplish research goals. The main achievement is the formulation of the main hypothesis that the IT outsourcing impacts positively the level of business-IT alignment. The results of interviews and questionnaires showed that the ITO has a positive effect on BIA level. Also results of the empirical validation suggest the possibility to compose several other hypotheses with respect to ITO and BIA. The next chapter presents conclusions about this research, elaborates the limitations and indicates the possibilities for future work.

# Chapter 7 Conclusion

This chapter discusses the major conclusions drawn based on the analysis of the empirical findings and theoretical study from the previous chapters. First, the answers to the research questions are provided and the goals of the project are fulfilled. Second, the limitations of the research are pointed out. This chapter closes with recommendations for future research.

## 7.1 Research conclusions

Traditionally alignment between business and IT is seen as an internal challenge, while outsourcing expands it out of the organizational borders. As a result, a company should consider business processes and the way of working of the third party. In this situation alignment maturity is harder to achieve and manage. The available theoretical literature investigating the relationship between ITO and BIA is inconclusive. The purpose of the current study was to answer three research questions.

RQ1. What is the state of art in the field of BIA, ITO and their relationship?

The first research question was answered in Chapter 3. The comprehensive literature analysis revealed lack of scientific research of the relationship between BIA and IT outsourcing, and justified the necessity of the present study.

RQ2. How to evaluate maturity level of BIA in ITO context?

The second research question was answered by constructing the model in Chapter 5. The introduced mechanism allows for exploring the influence of IT outsourcing on business-IT alignment maturity. The classical model for BIA assessment proposed by Luftman was extended with two additional dimensions *Employee engagement* and *Technology scope*. The modified model covers additional aspects that have an influence on the alignment within the organization. IT outsourcing maturity is measured within set of factors that influence success of ITO activities. This set of factors is derived from the literature review and is evaluated by field experts.

RQ3. Based on the case study findings what hypothesis can be generated about the effect of IT outsourcing on the level of alignment maturity?

The third question is addressed through empirical evaluation. The main empirical findings were elaborated in Chapter 6. The research was conducted in four companies and accompanied with three filled-in surveys.

Some research was done with respect to cloud computing. However if researchers are interested in cloud computing subject and its connection with business-IT alignment they should go deeply into a question, since cloud computing is not the main subject of the current research. It was shown that the gathered data cannot distinguish cloud computing services from other outsourced IT services. Therefore, the results are formulated for IT outsourcing in general without scoping to cloud computing.

From the outcome of the investigation it is possible to formulate the hypothesis that IT outsourcing has a positive impact on the level of business-IT alignment<sup>2</sup>. This pattern is consistent with findings of Pollais (Pollalis, 2003), van Lier & Dohmen (van Lier, J., & Dohmen, T., 2007) and Derksen (Derksen, 2013). The research conducted by these authors drew the similar conclusion but used another models and methods (see Section 6.4.4). Since cloud computing is a type of IT outsourcing, the findings can refer to the same expected influence of cloud computing on the business-IT alignment level.

Besides the main hypothesis, obtained results afford ground for other hypotheses. They have been formulated and explained in Section 6.4.5.

Apart from the generation of the hypotheses, the empirical study also targeted to evaluate the understandability and applicability of the designed model in a practical environment. The obtained findings were summarized in Section 6.4.6 and lead to the further possible improvements of the model which are reported further in Section 7.3.

This thesis project makes several noteworthy *contributions* to BIA and ITO research and literature.

- It identifies a clear definition to the concept of business-IT alignment.
- It presents several business-IT alignment frameworks and thorough comparative analysis which identifies Luftman's model as the most appropriate model for measuring the maturity of alignment.
- It explicitly articulates ITO factors, which determine success of ITO relationships, based on the scientific literature and consulting with experts of the field.

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<sup>2</sup> The results should be considered with care. The sample set of seven subjects is too small to draw statistically valid conclusions. The goal was to formulate hypotheses that can be further tested with the larger sample of companies.

- The main contribution of the thesis is the design of the model for investigating impact of ITO on the level of BIA within the organization. The Luftman's model was extended with two dimensions *Employee engagement* and *Technology scope*. The new model assesses maturity of business and IT alignment comprehensively and covers more dimensions of alignment.
- The measurement mechanism is clearly established. The description increases the reliability of the research and makes it easily repeatable.
- Based on the theory and empirical data using four case studies and three surveys, the study provided new valuable insights into the topic under discussion. The main result is the formulation of hypothesis. Although the current study is based on a small sample of participants, the findings suggest that ITO has a positive effect on the level of BIA.
- Empirical investigation results afford a ground for several hypotheses about BIA and ITO. Its validity should be proven in the future research with larger sample of companies.

## 7.2 Limitations

The current research project has several possible limitations.

- General shortcomings of the case study method are inherent to this thesis. The main limitation of the empirical findings is the fact that small sample has been studied which limits statistical generalizability of the research.
- Scope was limited to only Dutch companies.
- The analysis does not enable to determine the effect of cloud computing. The gathered data was not enough to distinguish cloud computing outsourcing and other IT outsourcing services.
- Questionnaire was sent to only one person in each company whereas responses from both business and IT sides could provide more detailed information.
- The realized limitation is that *Employee engagement* dimension was evaluated by the person of managerial role. It was concluded that managers can have biased perspective, and it would more valuable to gain insights of the regular employee.

### 7.3 Future research

The analysis of the results and determined limitations of this thesis outline several recommendations for future research.

- Consistent with the major limitation, the further research should target more companies. The case study research does not provide statistical generalization; hence the formulated hypotheses should be further tested with larger sample set.
- Another option for further research is broadening the large scale research to the companies from different sectors. The results will help to analyse the trend in different industries and draw conclusions with respect to this characteristic.
- The credibility and transparency of the research can be improved by including more respondents (sources of information) within one organization in the assessment process.
- In order to draw conclusions regarding to cloud computing specifically, future research should focus on companies which outsource services only in the cloud and are not engaged in the traditional IT outsourcing. This task will be challenging since cloud computing is still emerging while traditional IT outsourcing firmly established itself.
- Most certainly the companies participated in the current research would like to investigate relative development of alignment and see whether they improve over time. The identical research can be conducted over some period of time in order to see what actions give results or which one are not productive.
- In the line with the respondents' suggestions, the questionnaire should be revised for the duplicated questions. The present research can be considered as a preliminary investigation that exposed shortcomings of the composed questionnaire. Additionally with respect to the questionnaire, the shorten version should be designed. This potentially can increase response rate of a survey.
- The further research should focus on elaboration of factors influencing ITO maturity. The mechanism of measuring ITO success should be further extended.
- In the present research all ITO factors are considered to be equally important for calculating ITO success. However, future research can focus on investigating the relative weight of each factor and assigning coefficient of importance.
- The same suggestion applies to the business-IT alignment dimensions. Future research should investigate relative importance of BIA dimensions in the ITO situation.

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## Appendix A. Literature review (full version)

### 1 Introduction

The present literature review examines the available research on Business-IT alignment (BIA) in the context of IT Outsourcing (ITO). The literature review seeks to describe, summarize, evaluate, clarify and/or integrate the content of primary reports (Cooper 1988). The main objectives for undertaking a literature review contain eliciting information for an introduction to the study in the field and providing a complete inventory of the theory on the topic. Several research questions need to be answered in order to accomplish the main objectives. These research questions are related to one of the two main notions of BIA and ITO.

Business-IT alignment:

- 1) What is the definition of Business-IT alignment?
- 2) What frameworks exist to evaluate Business-IT alignment?
- 3) What is the most suitable framework for measuring Business-IT alignment?
- 4) What challenges does Business-IT alignment face in empirical literature?

IT Outsourcing:

- 5) What is the definition of IT Outsourcing?
- 6) What benefits can be obtained by outsourcing of IT services?
- 7) What risks are associated with IT outsourcing?

Combination of BIA and ITO:

- 8) What is known about the relationship between BIA and ITO?

Over the last decades the role and impact of information technology (IT) management has changed significantly. Starting from traditional function as business support, IT has evolved into a vital component of organization's strategy for almost any kind of business. Many organisations realize that aligning information technology and business objectives is a managerial priority for solving organizational and business challenges (Tallon, P.P., & Kraemer, K.L. 2011). A recent study rated alignment between Business and IT as the number one priority of IT executives (Luftman, J., & Ben-Zvi, T. 2011). IT Outsourcing has become a popular intervention in the last two decades. The modern history of IT outsourcing starts with contract between Kodak and IBM when the former handed over control of its datacenter operations to IBM (Lacity, M.C., & Willcocks, L.P. 2001). Reduction of operating cost is the primary reason of IT Outsourcing ((Ang, S., & Straub, D. 1998); (Craig, D., & Willmott, P. 2005)). Lately, apart from the lower costs that IT Outsourcing can deliver, companies expect IT outsourcing to "transform IT functions into lean, dynamic groups that respond quickly to business needs and opportunities" (Lacity, M.C., & Willcocks, L.P. 2001) and deliver business value.

The notions of BIA and ITO are central for the present literature review. Therefore, literature review determines the current state of knowledge in these topics and the potential areas of future research.

The remainder of the paper is structured as follows. An applied literature review methodology is designed and presented at a high level in Section 2. The different stages of the approach are described in the following sections. Section 3 defines the topic of the study. Furthermore, Section 4 explains the literature search procedure and Section 5 gives an overview of quality assessment procedure and selection criteria. Analysis and synthesis of elaborated literature is presented in Section 6. Sub section 6.1 provides research on Business-IT alignment notion, more specifically definition of BIA, description of Business-IT alignment frameworks, a comparative analysis of these frameworks, justification of selected measurement model, finalizing with discussion of challenges of achieving BIA. The IT outsourcing notion is presented in sub section 6.2. First, the term is explained, followed by elaboration of ITO benefits and risks. Chapter 6 finalizes with the discussion of the relationship between BIA and ITO in sub section 6.3. The paper finalizes with conclusions and an outlook to future work in Section 7.

## 2 Literature Review Methodology

Baker describes a literature review as the fundament for the elaboration of a new research project (Baker 2000). Literature review frameworks and protocols are mechanisms for searching bodies of knowledge, namely literature sources. In order to write comprehensible and effective literature review Kitchenham proposed a five-step systematic literature review framework presented at Figure 1(Kitchenham 2004).



Figure 1. Framework for systematic literature review (Kitchenham 2004)

Firstly, the topic of the review must be defined – only a well-considered and precisely formulated topic is likely to lead to a high quality literature review. At this step, clear and structured questions should be formulated in order to guide all the review process. Step two consists of searching relevant literature; it is done via applying literature search protocol. The literature search consists of identifying keywords and choosing information sources. Literature search can result in a pool of potential candidate articles which proceeds to the quality assessment stage. At this stage it is decided if the studies are included in the literature review or not. The identification of the selection criteria is a part of this step. The synthesis phase is about concisely summarizing and linking different sources in order to review the literature on a topic. Finally, the interpretation of results provides conclusion and develops recommendations for future research.

The proposed framework follows the systematic data processing approach comprised of five major stages; the structure of the report yields these steps.

### **3 Selecting a Review Topic**

The first step of the literature review process involves identifying the subject. In the present case, the literature review builds a solid theoretical foundation for the Master Thesis: “Towards Business-IT Alignment in IT Outsourcing Context”. A review of past literature serves as a crucial endeavor for any academic research (Webster, J., & Watson, R.T. 2002). It provides contextual background information for the research problem as well as it gets the reader acquainted with basic definitions and notions. The research questions of the literature review were previously formulated in introduction. However, it is important to see wider perspective and mention goals of the Master Thesis. The thesis has two main research goals. The first is to describe measurement mechanism to assess BIA in organizations that outsource IT services. The second goal is to investigate the effect of IT outsourcing on the Business-IT alignment in companies via survey.

### **4 Literature Search Methodology**

The next step is to define search methodology for obtaining appropriate and related information.

Newell and Burnard (Newell, R., & Burnard, P. 2006) suggest that comprehensiveness and relevance are what reviewers need to consider. Additionally, they highlight that the more specific the topic or question being searched is, the more focused the result will be. In order to perform a complete literature search, a four steps process was undertaken: keywords search – database search – backward search – forward search.

The keyword search is the most effective method of identifying literature. Meaningful keywords for the current literature review are: *Business-IT alignment, strategic alignment, IT alignment, alignment frameworks, alignment models, alignment challenges, IT outsourcing, outsourcing, cloud computing*. To help with these combinations many databases use Boolean operators, such as AND, OR and NOT.

The development of Internet made it easier and quicker to access potentially relevant sources. Computer databases offer access to vast quantities of information, which can be retrieved more easily and quickly than using a manual search (Younger 2004). Therefore the literature search was conducted over the internet using the most credible and trustworthy databases.

Table 1 presents a set of databases which were considered for information search and retrieval.

Table 1. Considered databases

Database	Disciplines / Description
IeeeXplore <a href="http://ieeexplore.ieee.org/Xplore/home.jsp">http://ieeexplore.ieee.org/Xplore/home.jsp</a>	Computer Science, Engineering, Electronics
CiteSeerX <a href="http://citeseerx.ist.psu.edu/index">http://citeseerx.ist.psu.edu/index</a>	Computer science, Statistics, Mathematics, becoming Multidisciplinary
Google Scholar <a href="http://scholar.google.com/">http://scholar.google.com/</a>	Search the Web for peer-reviewed papers, theses, books, preprints, abstracts, and technical reports from broad areas of research.
ACM <a href="http://dl.acm.org/">http://dl.acm.org/</a>	Computer science, Information Technology
Emerald <a href="http://www.emeraldinsight.com/">http://www.emeraldinsight.com/</a>	Provides online access to journals in management, information services, engineering, applied science and technology.
ScienceDirect <a href="http://www.sciencedirect.com/">http://www.sciencedirect.com/</a>	Physical Sciences and Engineering, Life Sciences, Health Sciences, Social Sciences and Humanities
TUe Library <a href="http://w3.tue.nl/en/services/library/">http://w3.tue.nl/en/services/library/</a>	Extensive digital library

Figure 2 shows the distribution of literature sources used in the present literature review across on-line databases. The largest amount of relevant literature (25 %) was extracted through the Google Scholar database, which is not surprising as far as Google Scholar indexes all major subscription databases.

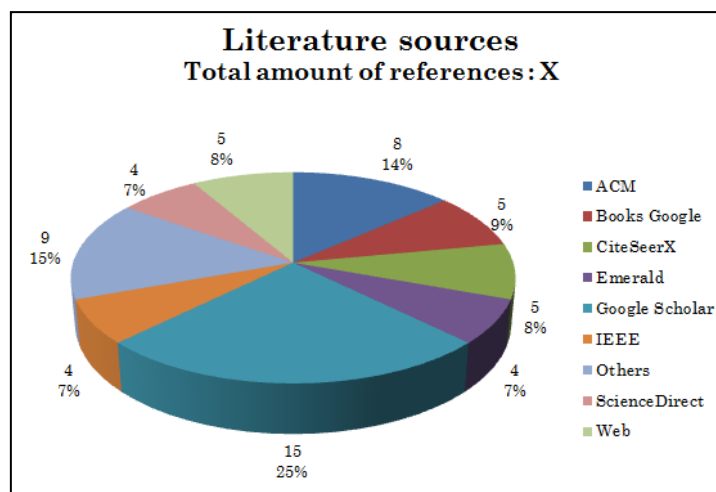


Figure 2. Literature sources

All reference sources can be categorized as primary, secondary or tertiary (Prytherch 2000). Primary sources are original materials on which other research is based. They present information on its original form, neither interpreted nor condensed nor evaluated by other writers (University 2013). Examples include journal articles, conference papers, reports and

patents. Secondary sources are interpretations and evaluations of primary sources. Secondary sources are not evidence, but rather commentary on or discussion of evidence (Maryland 2013). Examples are review, criticisms and data compilation. The tertiary literature consists of published works that are based on primary or secondary sources and that are aimed at scientists who work in different areas from the subject matter of the publication, or towards an interested but non expert audience. Such publications are normally written in a popular rather than scientific style (Schembri 2007). Figure 3 presents types of references that are used in the current literature review. It can be seen that journals and conference papers are considerably the majority of references analyzed, representing 73 % of all references in this literature review.

It is interesting to mention that both notions of *Business-IT alignment* and *IT outsourcing* can be located at the intersection of information technology and management disciplines. The name *Business-IT alignment* implies this by containing words *business* and *information technology*. It represents the gap between business and technical people, management and IT goals. *IT outsourcing* in turn should be seen not only as subcontracting some IT functions to external provider, but also as activity for achieving business advantages and outcomes. Therefore, literature search was performed among top journals in information technology and management fields. For example, the majority of journal references (which is 22%) are taken from the MIS Journal, ranked number one among the *Management Information Systems* category based on the SCImago Journal Rank (SJR). SJR is a measure of scientific influence of scholarly journals which takes into account (1) number of citations received by a journal and (2) the prestige of the journals where such citations come from.

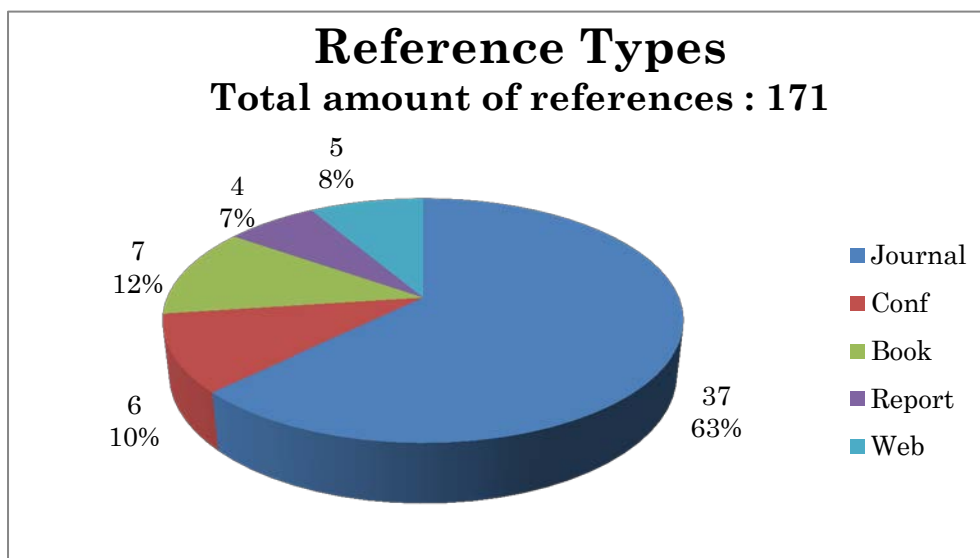


Figure 3. Types of references

Literature search protocol has been applied in order to retrieve sources for the literature review. The first and topmost step in literature search protocol is the identification of cardinal papers. Some papers are referenced more than others and likely those papers are referenced also from the relevant papers (Runeson, P., & Skoglund, M. 2009). These papers are called



cardinal papers. The second step is searching papers that cite cardinal papers, this is called forward search. Forward references search refers to reviewing additional articles that have cited an article. The idea of backward and forward search originated from Webster and Watson's article (Webster, J., & Watson, R.T. 2002). Forward reference search was accomplished by conducting an electronic library database search for articles that include article of interest in their citations. Conducting so enables the researcher to extend his knowledge even further by locating follow-up studies or newer developments related to the phenomenon under study (Levy, Y., & Ellis, T.J. 2006). The last step of literature search is conducting of a backward search. The concept of backward reference searching lies in going through the bibliographic reference lists of the accessed articles. These references also become a valuable source of information.

## **5 Literature Quality Assessment**

Once the potentially relevant primary studies have been obtained, they need to be assessed for their actual relevance. This assessment is done in a series of steps, which helps to reduce the pool of references to only relevant and high-quality sources. First step is formulating the number of the selection criteria and applying them for filtering of the references extracted at the previous step. The following selection criteria are formulated:

- The main selection criterion is that the studies should help to answer the review questions.
- Studies must directly affect particular research questions identified in Introduction. Otherwise, there is a high risk of getting bogged down in enormous amount of information.
- Studies must have been published in peer reviewed journals (also called refereed journals, or scholarly journals). In order to meet this selection criteria studies for the current literature review have been retrieved from databases that allow to the user limit searches for articles to peer reviewed journals only.
- Studies are identified as highly cited by other researchers. This criterion provides a confidence in high scientific impact of the selected paper and can be checked, for example, via Google Scholar database.

Next step is passing the selected papers through relevance criteria. The relevance criteria can be checked by reviewing the abstract and analyzing if the reference really addresses the issues of interest. Further, the content of references that passed the previous steps is reviewed. This might lead to a new set of references. Finally, the remaining papers represent references that are considered for the literature review. The references are filtered by content.

The queries can be modified and changed at any time new keywords are discovered; therefore, this methodology can be seen as a continuous process of searching the literature.

## 6 Literature Analysis and Synthesis

Information technology function is seen as a support function, created to facilitate the management needs. It is common that companies experience misunderstanding and frustration between IT and business teams. The business side perceives that IT one as generally reactive, technology-focused and contentious instead of proactive, business-focused and collaborative. The IT organization perceives that the business part does not consult with them prior to proposing initiatives that IT will have to maintain in future. For making IT a strategic asset of business and achieve enterprise's objectives, it is important to align it with business.

In this chapter, definitions of the terms BIA and ITO are provided. Zorn and Campbell (Zorn, T. & Campbell, N. 2006) emphasized the importance of defining key terms in order to create common understanding of basic terms and definitions. In addition, frameworks for BIA are described, followed by comparative analysis and selection of the one most appropriate for measuring the level of BIA. It is also important to identify challenges that companies face when aligning IT and business. Furthermore, IT outsourcing is the second major concept of this literature review. Benefits and risks of outsourcing in-house services to external provider are described below. Finally, the relationship between BIA and ITO is studied based on scientific literature.

### 6.1 Business-IT alignment

#### 6.1.1 BIA definition

Researchers and practitioners have studied the topic of BIA over the last decades. Consequently, multiple definitions can be found in literature. Table 2 lists the definitions of the founders of business / IT alignment, whose definitions are used as the base for other research and whose works are highly cited among scientists and practitioners. It can be seen that modern studies just reformulate proposed definitions but do not add scientific novelty of clarity.

For example, Carvalho and Sousa (Carvalho, R., & Sousa, P. 2008) define BIA as “degree the information technology mission, objectives, and plans, support and are supported by the business mission, objectives, and plans”. This definition has very much in common with definition of (Reich, B.H., & Benbasat, I. 2000). Another example is the definition given by Silvius (Silvius 2007). In his words “Business & IT Alignment is the degree to which the IT applications, infrastructure and organization, the business strategy and processes enables and shapes, as well as the process to realize this”. This definition takes *IT infrastructure* and *business strategy* components from (Henderson, J.C., & Venkatraman, N. 1993) definition, while the process component can be found in (Maes, R., Rijsenbrij, D., Truijens, O., & Goedvolk, H. 2000) definition.

When analyzing definitions in Table 2, it appears that various alternative terms exist to refer to the phenomenon of alignment: *fit* (Henderson, J.C., & Venkatraman, N. 1993), *integration* (Henderson, J.C., & Venkatraman, N. 1993), *congruence* (Broadbent, M., & Weill, P. 1993), *liaise* (Luftman, J.N., & Brier, T. 1999). Also for description of alignment authors use the

following words – *coordination* (Lederer, A., & Sehti, V. 1988), *harmony* (Woolfe 1993) and *bridge* (Ciborra 1997).

Likewise, all definitions are common in describing the business component in Business-IT alignment, which covers strategy, mission and goals. The terms used to indicate this include *business strategy* (Henderson, J.C., & Venkatraman, N. 1993), *mission* ((Reich, B.H., & Benbasat, I. 2000); (Luftman, J.N., & Brier, T. 1999)), *objectives* ((Broadbent, M., & Weill, P. 1993); (Reich, B.H., & Benbasat, I. 2000); (Luftman, J.N., & Brier, T. 1999)), *strategic plans* ((Luftman, J.N., & Brier, T. 1999); (Reich, B.H., & Benbasat, I. 2000)) and *business goal* (Campbell 2005). More concrete terms, such as *business infrastructure* ((Henderson, J.C., & Venkatraman, N. 1993); (Broadbent, M., & Weill, P. 1993)), appear only in some of the definitions.

It is shown that there is no generally accepted definition of IT alignment among the researchers, although BIA is rated as the top priority of IT executives.

Table 2. Definitions of Business-IT alignment

Source	Definition of BIA
(Henderson, J.C., & Venkatraman, N. 1993)	The degree of fit and integration between business strategy, information technology strategy, business infrastructure and information technology infrastructure.
(Reich, B.H., & Benbasat, I. 2000)	The degree to which mission, objectives, and plans contained in the business strategy are shared and supported by the IT strategy.
(Campbell 2005)	The process where business and IT work together to achieve a common business goal.
(Broadbent, M., & Weill, P. 1993)	The degree of congruence of an organization's IT strategy and IT infrastructure with the organization's strategic business objectives and infrastructure.
(Maes, R., Rijsenbrij, D., Truijens, O., & Goedvolk, H. 2000)	The continuous process, involving management and design sub-processes, of consciously and coherently interrelating all components of the business – IT relationship in order to contribute to the organisation's performance over time.
(Luftman, J.N., & Brier, T. 1999)	The extent to which IT and business liaise when formulating their mission statements, their objectives and their strategic plans and whether these are supported by the information technology strategy.

Generally speaking, alignment is defined in vague and equivocal way. For example, definitions of (Luftman, J.N., & Brier, T. 1999) and (Reich, B.H., & Benbasat, I. 2000) do not make the concept of alignment any clear but rises more questions of what the Business-IT alignment is. Apart of being vague, some definitions are contradictory by nature. (Campbell 2005) and (Maes, R., Rijsenbrij, D., Truijens, O., & Goedvolk, H. 2000) state that alignment is a process and continuous activity, while (Broadbent, M., & Weill, P. 1993) see it more like outcome of particular actions.

In order to proceed with a solid research it is important to have clear definition of Business-IT alignment and common understanding of the concept. From all definitions presented above, definition of (Maes, R., Rijsenbrij, D., Truijens, O., & Goedvolk, H. 2000) is the most elaborated and cover all important aspects: shows that alignment is not a static state but has a dynamic nature; does not restrict alignment to strategic point but include operational view; lacks of ambiguous words as harmony, balance, etc.; includes not only managerial processes but design processes as well. Therefore, this definition is used in the present literature review for describing BIA concept.

### **6.1.2 BIA frameworks**

Many empirical researches have proved that BIA positively impact the business performance ((McAdam, R., & Bailie, B. 2002); (Kearns, G. S., & Sabherwal, R. 2006)). Misalignment may lead to both, poor performance in business and increasing inefficiency in operations (Pongatchat, P., & Johnston, R. 2008).

Literature suggests different approaches of measuring alignment. Some authors propose to use frameworks, while the others suggest evaluating alignment based on metrics. After reviewing studies with metrics approach ((Aversano, L., Grasso, C., & Tortorella, M. 2013); (Aversano, L., Grasso, C., & Tortorella, M. 2010); (Amer, M., & Gómez, J. M. n.d.)), it can be concluded that all of them operate at the functional level, considering alignment between business and software systems. Aversano et al. (Aversano, L., Grasso, C., & Tortorella, M. 2013) introduced quantitative measures such as technological coverage and technological adequacy that can demonstrate level of alignment between a business process and related system. However, in the current thesis we take as a premise that Business-IT alignment is seen as strategic alignment but not operational. It can be seen in Section 6.1.1 that most of definitions contain business strategy component applying that strategic alignment is more than alignment with software systems. Nowadays, IT is no longer just a software and information systems, but it also is a strategic component, enabler of internal efficiencies and competitive advantages. The definition of (Maes, R., Rijsenbrij, D., Truijens, O., & Goedvolk, H. 2000) has been selected as a guiding definition for this research. It states that alignment should take into account “interrelating all components of the business – IT relationship”, such as enterprise goals, strategic plans, business processes, technology, IT strategy and information systems.

Frameworks are the traditional approach of measuring strategic alignment and include different aspects of inter-relations between business and IT. Several models, or frameworks, have been developed in order to analyze alignment between organization’s business and

information technologies. This chapter aims to describe multiple models for measuring BIA and the adequate selection of the most appropriate one. First, four Business-IT alignment frameworks are introduced. Secondly, one of the presented frameworks is selected for measuring BIA in organizations.

### Strategic Alignment Model (SAM)

Henderson and Venkatraman (Henderson, J.C., & Venkatraman, N. 1993) developed the strategic alignment model (SAM) which became the most famous and discussed one among researchers (Avison, D., Jones, J., Powell, P., & Wilson, D. 2004) (see Figure 4).

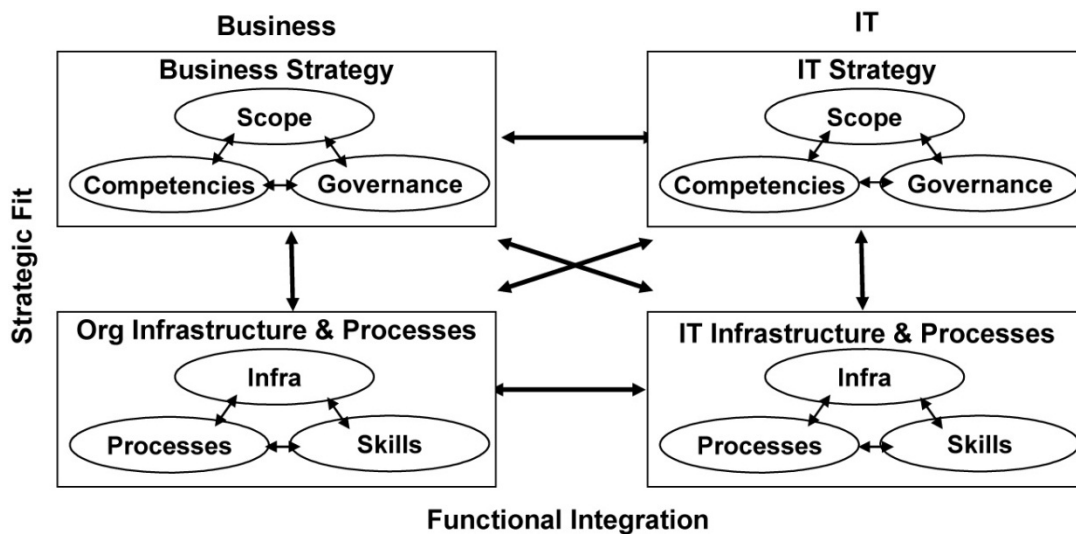


Figure 4. Strategic Alignment Model (Henderson, J.C., & Venkatraman, N. 1993)

SAM consists of four domains. From one hand, these domains can be seen as an explicit separation of business and IT sides. In this case two domains represent the business side – *Business Strategy* and *Organizational Infrastructure and Processes*, while *IT Strategy* and *IT Infrastructure* describe the IT side. Authors also see these four domains from the internal and external perspectives of alignment to the organization. External focus shows that organizations must align their business and IT strategies with industry and technology forces. Likewise, businesses must internally align organizational and IT processes and infrastructure.

The four domains are linked to each other. Functional integration links the Business and IT sides of alignment, whereas strategic fit deals with the link between the external and internal components.

Each one of the four domains is further subdivided in to three sets of components within each block. The resulting framework consists of four linked perspectives and contains twelve alignment components.

### **Strategic Alignment Maturity Model (SAMM)**

Luftman (Luftman 2000) proposed a model to evaluate the company's alignment maturity level. The maturity of the strategic alignment is determined by 38 attributes which are classified in six criteria (see Figure 5). The description of each criterion is given below (Luftman, J., Bullen, C.V., Liao, D., Nash, E., & Neumann, C. 2004).

*Communications* refers to ensuring ongoing knowledge-sharing across organizations.

*Competency/Value Measurements* is related to demonstrating the value of IT in terms of contribution to the business.

*Governance* means ensuring that the appropriate business and IT participants formally discuss and review the priorities and allocation of IT resources.

*Partnership* refers to the relationship that exists between business and IT organization.

*Scope and Architecture* is the extent to which IT is able to support flexible infrastructure, provide solutions customizable to customer needs, evaluate and apply emerging technologies effectively, and enable or drive business processes and strategies as a true standard.

*Skills* includes all of the human resources considerations for the organization.

Each attribute is measured on Likert five-point scale. The average of all attributes within one criterion leads the average maturity level per criterion, and then the average of all six criteria as a whole present the current maturity level of BIA in the selected organization. Five levels of strategic alignment maturity are presented on Figure 6.

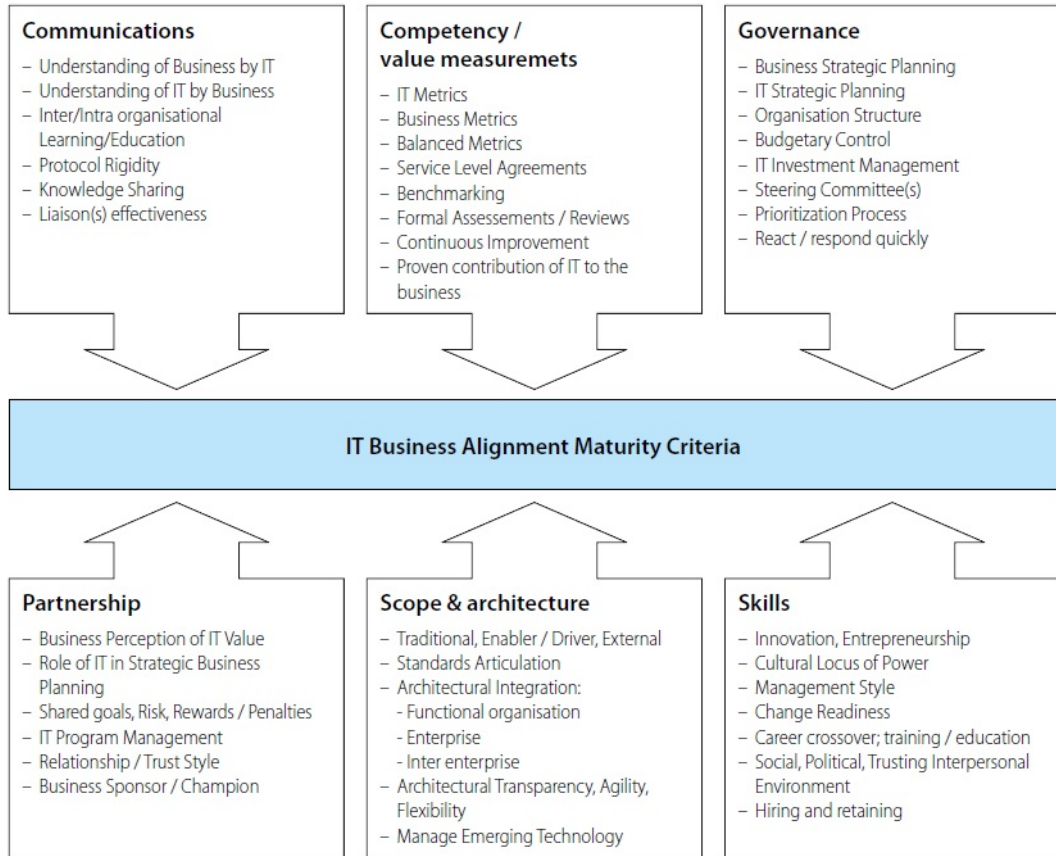


Figure 5. SAMM model (Luftman 2000)

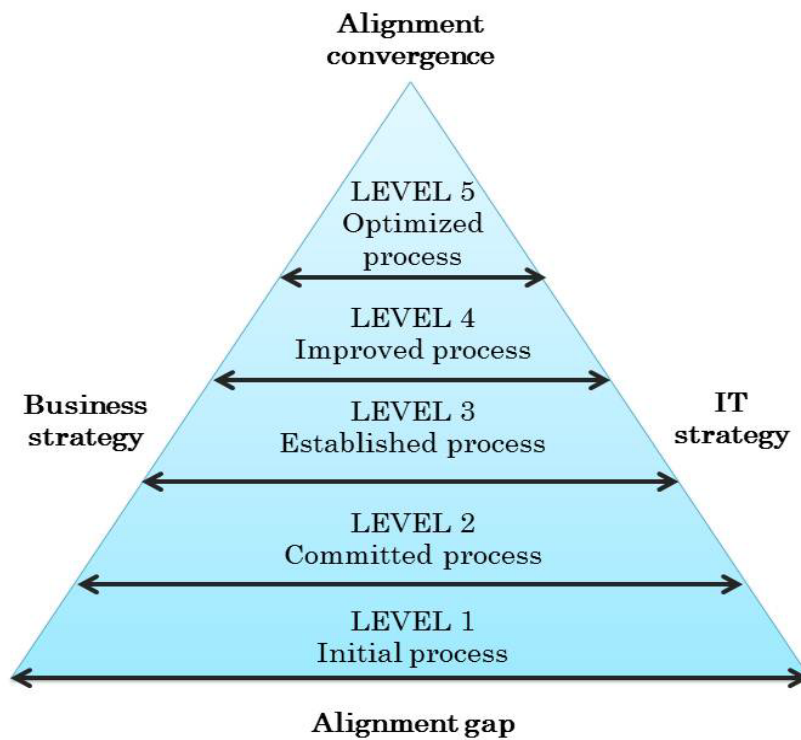


Figure 6. Levels of BIA maturity

## Reich and Benbasat Model (RBM)

Reich and Banbasat proposed the view of alignment as the linkage of intellectual and social dimensions (Reich, B.H. & Benbasat, I. 1996). In organizational practice intellectual dimension is shown as “the state in which a high-quality set of interrelated IT and business plans exists”, whereas the social dimension is “the state in which business and IT executives within an organizational unit understand and are committed to the business and IT mission, objectives, and plans”. A measurement method is developed for the social dimension.

Four factors are recognized to influence alignment along the social dimension: shared domain knowledge, IT implementation success, communication between business and IT executives, and connections between business and IT planning (see Figure 7).

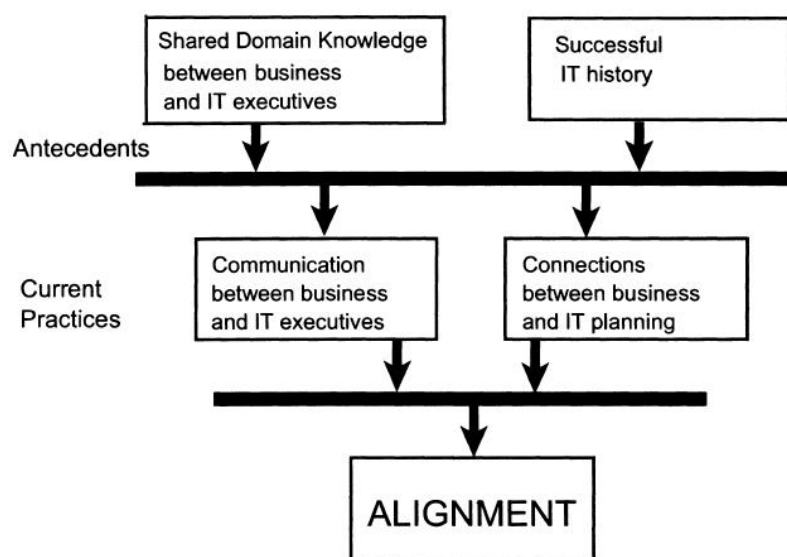


Figure 7. Reich and Benbasat Model (Reich, B.H. & Benbasat, I. 1996)

Each one of the factors has an influence over alignment (Reich, B.H., & Benbasat, I. 2000):

*Shared domain knowledge* is defined as the ability of IT and business executives, at a deep level, to understand and be able to participate in the others' key processes and to respect each other's unique contribution and challenges.

*Successful IT implementation*: the more successful the previous IT implementation the more trust business executives have in IT and the more motivation to communicate with the IT department, which leads to better alignment.

*Communication between business and IT executives*: the communication between business and IT executives can positively affect the level of mutual understanding and alignment.

*Connections between business and IT planning processes*: the more IT executives are involved in business planning the more they can understand and support the business objectives, leading to better alignment.



Apart from the different factors described above, a distinction is also made between short-term (current objectives) and long-term (vision between IT and business executives) linkage.

The results of the research show that all four factors in the model influence short-term alignment, while only shared domain knowledge effect long-term alignment. Reich and Benbasat found that enhanced strategic alignment resulted from the shared domain knowledge produced by higher levels of communication between IT and business executives (Nickels 2004).

### Sabherwal and Chan Alignment Model (SCAM)

Sabherwal and Chan (Sabherwal, R., & Chan, Y.E. 2001) elaborated a model of fit between business strategies and IT strategies (see Figure 8). Their model has emphasis on “realized strategies, rather than intended strategies, and IS strategy, rather than IT or information management strategies” (Mekawy, M., Rusu, L., & Ahmed, N. 2009).

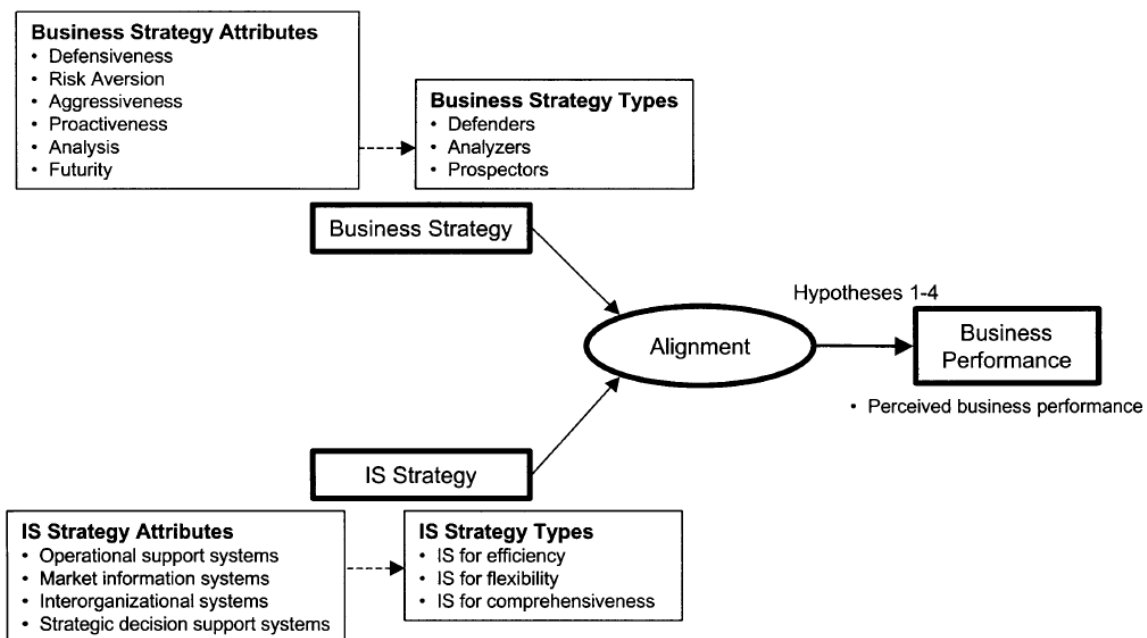


Figure 8. Sabherwal and Chan Alignment Model (Sabherwal, R., & Chan, Y.E. 2001)

Authors study the relationship between business strategy and IT strategy using Miles and Snow’s (Miles, R.E., & Snow, C.C. 1978) classification of Defender, Analyzer, and Prospector business strategies. Specifically, the Defenders emphasize cost containment, the Prospectors desire flexibility and innovation, and the Analyzers endeavor to simultaneously achieve efficiency and innovation. Sabherwal and Chan concluded that a defender business strategy is best served with *IT for efficiency* strategy, in which IT is oriented towards internal and inter-organizational efficiencies and improved decision making. The most suitable business strategy for prospectors is *IT for flexibility*, which focuses on market flexibility and quick decision making. Finally, an analyzer business strategy is best matched by *IT for*

*comprehensiveness* strategy, which enables comprehensive decision making and quick responses through knowledge of other organizations.

### 6.1.3 Comparative analysis

The previous section presents different models and frameworks illustrating that the topic of Business-IT alignment has been largely elaborated by researches from multiple perspectives. In a form of intermediate chapter summary, the overview of alignment models is presented in Table 3.

Table 3. Overview of alignment frameworks

<b>Model</b> <b>Criterion</b>	<b>SAM</b>	<b>SAMM</b>	<b>RBM</b>	<b>SCAM</b>
Authors	Henderson, Venkatraman	Luftman	Reich, Benbasat	Sabherwal, Chan
Research approach	Theory	Survey	Case study	Survey
Number of dimensions	4	6	2	1
# of citations of Google Scholar	2739	601	925	208
Usability	Theory and practice	Practice	Theory	Theory

Mekawy et al. (Mekawy, M., Rusu, L., & Ahmed, N. 2009) developed an alignment model's evaluation framework and presented a structured and comprehensive comparison of diverse Business-IT alignment frameworks. The summary of the evaluation of alignment models is presented in Table 4.

Strategic Alignment Model (SAM) is a comprehensively designed model because it differentiates between domains and sub-domains at all parts of both, business and IT. However, it does not reach to the operational level. Although the model can be applied to measure the alignment, it does not highlight the risks faced by the company.

SAMM model is one the most well defined; it follows bottom-up approach from factors that influence alignment to Business and IT strategies at the top level to attributes within each factor.

SCAM model is not complete as it focuses on general aspects of business and IT domains only on the surface. For example, it only works at the strategic and tactical levels, without considering the processes. In contrast, SAMM has not only considered business goals but also that those goals are part of the alignment model.

SAM and SAMM are applicable for companies of all sizes, while SCAM and RBM can only be implemented in medium and small size organizations.

RBM measure social dimensions of alignment which is not considered in other models, however it lacks analysis of business domain.

Table 4. Evaluation of alignment frameworks

<b>Model</b> <b>Criterion</b>	<b>SAM</b>	<b>SAMM</b>	<b>RBM</b>	<b>SCAM</b>
Consideration of Business Goals	-	+	-	-
Method of Development	Th.	Survey	Survey	Survey
Organizational Size	L/M/S	L/M/S	M/S	M/S
Level of Correspondence	Str/Tac	Str/Tac/Opr	Str/Tac	Str/Tac
Information Strategy Content	IT/IS	IT/IS/IM	IT	IS
Flexibility	+	+	-	-
Strategic Fit	+	+	-	-
Strategic Integration	+	+	+	+
Complexity of Use and Apply	Med	Com	Sim	Sim
Th = Theoretical, CS = Case Study. L = Large, M = Medium, S = Small. Str = Strategic, Tac = Tactical, Opr = Operational. IT = Information Technology, IS = Information System, IM = Information Management. Med = Medium, Com = Complex, Sim = Simple.				

This chapter provides comprehensive evaluation of BIA frameworks.

#### 6.1.4 Selection model for BIA measurement

The present literature review builds a theoretical background for the Master Thesis. Therefore, alignment framework should meet the purposes of master project. The most important aspect in selecting the proper framework is the measurability of the Business-IT alignment in the organizations. Consequently, the model, which is the most suitable for measuring BIA, will be selected from BIA frameworks described above.

First, the model of Sabherwal and Chan is excluded from evaluation as far as it does not suggest any measurement instrument. The approach intends to measure BIA through the proximity of the actual business or IT strategy to the expected business or IT strategy. SCAM model is not appropriate for the purpose of this review as it focuses on general aspects of business and IT domains.

Further, the model of Reich and Benbasat is also excluded from consideration. The reason is that the RBM model only measures the social dimension of alignment: it incompletely covers

the full concept of Business-IT alignment. In comparison with other models which use more factors to determine BIA level, RBM has too narrow scope for assessing BIA in companies.

Therefore, only SAM and SAMM of Luftman are selected to the following selection stage. Strategic Alignment Model (SAM) is a comprehensively designed model because it differentiates between domains and sub-domains at all parts of both, business and IT. SAM consists of twelve well-defined components in four dimensions. This framework is a foundation for a vast number of theoretical and practical studies, and meets the demands for measuring the Business-IT alignment.

SAMM is the last framework presented in the evaluation. Its underlying principle lies in applying 38 attributes of six alignment criteria to assess the maturity level of Business-IT alignment on five-point scale. Luftman provides an assessment instrument which uses five levels of BIA maturity. The attributes have extended descriptions and measurability of the five levels is clearly defined. This model additionally can be used to develop a survey that is able to assess where a company stands regarding maturity. These considerations make SAMM framework the best suitable for this research.

Concluding, all presented models except SAMM are fairly unclear considering practical view on measuring alignment. For managers and executives the presence of measurement tool is a crucial factor of applying model in company. It could be explained by the need of drawing some practical conclusions regarding effectiveness of undertaken strategy which is not possible without measuring alignment.

In summary, the present chapter provides comprehensive evaluation of BIA frameworks and, via competitive analysis, shows that Luftman's SAMM framework is the most relevant for the primary research goal.

### **6.1.5 Challenges of Business-IT Alignment**

In previous sections, the Business-IT alignment term was defined and the evaluation of existing frameworks was provided. However aligning business and IT poses a considerable number of challenges for organizations. Below, the most significant ones are summarized based on BIA related scientific literature.

#### **Universal model does not exist**

A number of Business-IT alignment models have been elaborated over last decades. Nevertheless, no one of them is universally accepted and recognized by academics and practitioners. A universal framework would provide a shared understanding between BIA, components that may determine alignment and ways of achieving it (Luftman, J., & Kempaiah, R. 2007). Though, alignment frameworks presented in Section 6.1.2 are of widespread usage, with their specific qualities and limitations (Mekawy, M., Rusu, L., & Ahmed, N. 2009).

### **Descriptive nature of existing models**

Alignment frameworks presented in Section 6.1.2 are mostly descriptive by nature. Henderson and Venkatraman's Strategic Alignment Model, Alignment Model of Sabherwal and Chan and Maes et al.'s integrated architecture framework (Maes, R., Rijsenbrij, D., Truijens, O., & Goedvolk, H. 2000) (which is not present here) operate with theoretical constructs and foundational precepts. Some examples of those precepts include the different selection of components which BIA includes and how they can be defined. However the real application of these insights into the business environment is only possible by translating them from descriptive theory to more prescriptive practices (Marques Pereira, C., & Sousa, P. 2003).

### **Ambiguity of corporate strategy**

The alignment is not possible if the business strategy is unknown or unclear ((Chan, Y.E., & Reich, B.H. 2007); (Campbell 2005)). It contradicts the primary idea of most alignment models: a pre-existing business strategy, to which IT in organization can be aligned with. In Business-IT alignment notion, corporate strategy acts as a component from business side and becomes vital for logical existence of BIA.

### **Changing environment**

The business environment is constantly changing. Consequently, markets and organizations performances are highly dynamic. To remain competitive, companies are compelled to adapt continuously to changes such as market situation, technological progress or customer behaviour. The previous phenomenon highlights the observation of Chan and Reich (Chan, Y.E., & Reich, B.H. 2007) that "there may be no such thing as a 'state' of alignment". Therefore, strategic alignment is not an event but a process of continuous adaptation and change. This is (partly) seen by others such as (Parker, M.M., Benson, R.J., & Trainor, H.E. 1998), (Henderson, J.C., & Venkatraman, N. 1993) and (Papp 1999), who described that BIA is a process rather than an state.

## **6.2 IT Outsourcing**

### **6.2.1 ITO definition**

Generally, outsourcing can be defined as contracting previously internal services under contract to external supplier. Table 5 presents several significant definitions from the literature.

Table 5. Definition of outsourcing

Source	Definition
(McCarthy, I. & Anagnostou, A. 2004)	Outsourcing not only consists of purchasing products or services from external sources, but also transfers the responsibility for business functions and often the associated knowledge to the external organization.
(Barthelemy 2003)	Turning over all or part of an organizational activity to an outside vendor.
(Rothery, B. & Robertson, I. 1996)	The act of turning to an external organization to perform a function previously performed in-house. It entails the transfer of the planning, administration and development of the activity to an independent third party.

These definitions are slightly different but they share the idea that outsourcing involves a long-term contractual relationship with transferring internal services to an external provider. For the purposes of our research *outsourcing* will be interpreted by definition of (McCarthy, I. & Anagnostou, A. 2004). It explicitly shows that outsourcing activity is much more than simple relocating in-house services to external vendor. Besides, it relates ITO to alignment context by stating that company transfers also business functions to third party which can significantly affect alignment in the organization. As a result, alignment maturity is harder to achieve and manage. This definition also draws attention to potential risks associated with knowledge transfer.

Outsourcing can be classified in three categories: Business Process Outsourcing (BPO), Knowledge Process Outsourcing (KPO) and Information Technology Outsourcing (ITO).

*Business process outsourcing* may be defined as the delegation of one or more IT intensive business processes to an external agency, which, in turn, owns, administers and manages the selected process based on definite and measurable performance (UN-APCICT/ESCAP 2011). Operational functions of organization such as human resources, document management, accounting, security or others business processes can be outsourced to the third party.

*Knowledge process outsourcing* requires competitive knowledge and higher specialized skills. Examples of KPO include long-term jobs for intellectual, analytical and knowledgeable people within industries such as: research and development, intellectual property research, financial consultancy and services, business and technical analysis among others.

*IT outsourcing* is the use of external service providers to effectively deliver IT-enabled business processes. The most common outsourced services are network infrastructure, application development and helpdesk (Miozzo, M., & Grimshaw, D. 2006). Keeping these functions in-house can be not cost-effective, additionally third-party firms that specialize on the field can perform such functions more effectively and efficiently.

Cloud computing services can be viewed as a form of IT outsourcing. Cloud computing is internet-based computing in which shared hardware, software, and information are provided to computers and other devices (Li, Q., Wang, C., Wu, J., Li, J., & Wang, Z. 2011). The cloud computing model is composed of three service models: Infrastructure as a service (IaaS), Platform as a service (PaaS), and Software as a service (SaaS). The definitions of these models are taken from the Recommendations of the National Institute of Standards and Technology (Mell, P., & Grance, T. 2011). IaaS means provision processing, storage, networks, and other fundamental computing resources where the consumer is able to deploy and run arbitrary software. The examples are Amazon EC2 (<http://aws.amazon.com/ec2/>), Windows Azure (<https://www.windowsazure.com>), Rackspace (<http://www.rackspace.com/>). PaaS capability provided to the consumer is to deploy onto the cloud infrastructure consumer-created or acquired applications created using programming languages, libraries, services, and tools supported by the provider. The examples are Heroku (<https://www.heroku.com/>) and Google App Engine. SaaS provides to the consumer capability to use the provider's applications running on a cloud infrastructure. The applications are accessible from various client devices through either a thin client interface, such as a web browser (e.g., web-based email), or a program interface. The examples are Google Apps (<https://cloud.google.com/products/>) and Microsoft Office 365 (<http://office.microsoft.com/>). Cloud computing layers with examples of services are presented on Figure 9.

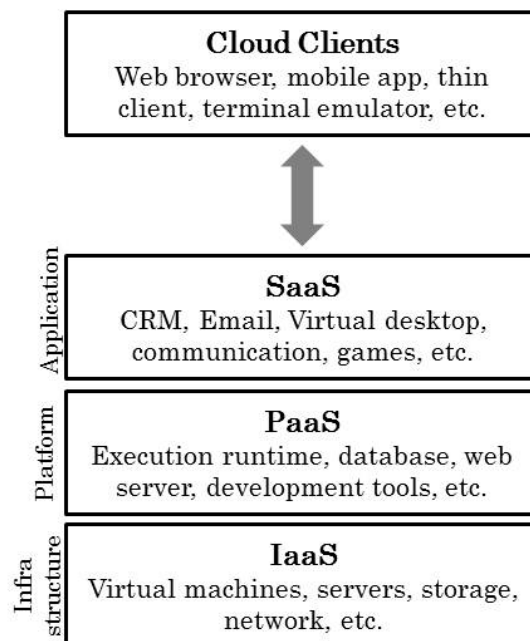


Figure 9. Cloud computing layers

Software, platform and infrastructure cloud services may be offered in a public, private or hybrid network depending on whether the computing resources are shared, dedicated, or a combination of both. Public cloud providers offer their cloud services to public, meaning that the same services are shared by many customers (multi-tenant). However, technology allows

building boundaries between customers for security and management reasons. In contrary of public cloud, the services and infrastructure are built only for an individual enterprise and maintained on a private network. They allow the firm to host applications in the cloud, while offering the greatest level of security and control. Hybrid cloud refers to the composition of private cloud with public cloud. By using a Hybrid approach, companies can maintain control of an internally managed private cloud while relying on the public cloud as needed. The data in public clouds may become subject to attacks from outsiders, or even from other customers in the same cloud. Therefore data transfer over the network becomes an important issue for cloud computing. For a model totally based on Internet such as cloud, this is a major drawback.

Extending the private cloud to public cloud in a hybrid mode while retaining what is necessary inside the company premise is an effective solution to benefit from the public cloud while overcoming its drawbacks.

Outsourcing can enable enterprises to reduce costs, accelerate time to market, and take advantage of external expertise, assets and/or intellectual property (Karamouzis 2010). Our research concerns IT outsourcing. Specific benefits and risks of ITO are described in detail in the following chapters.

### 6.2.2 ITO benefits

Outsourcing of IT services has number of benefits. Figure 10 shows the ten most common benefits that companies gain from IT outsourcing (Top 10 Reasons Companies Outsource 2009).

1. Reduce and control operating costs
2. Improve company focus
3. Gain access to world-class capabilities
4. Free internal resources for other purposes
5. Resources are not available internally
6. Accelerate reengineering benefits
7. Function difficult to manage/out of control
8. Make capital funds available
9. Share risks
10. Cash infusion

Figure 10. IT outsourcing benefits (Top 10 Reasons Companies Outsource 2009)

Although there is a variety of IT outsourcing benefits, the present document will focus on top three foremost supported by academic research. The primary reason of IT outsourcing is an



economical factor, namely, the opportunity of cost reduction ((Bielski 2004); (Craig, D., & Willmott, P. 2005); (Dibbern, J., Goles, T., Hirschheim, R., & Jayatilaka, B. 2004)). The company can reduce its expenses on specialized experts, expensive equipment and continuous maintenance. The strategic reason of IT outsourcing is to increase the focus on core competencies for achieving competitive advantage (Pralhalad 1990). When company outsources non-core activities, it can concentrate on the performance of the most important tasks in organization and also makes funds available for core activities instead of investing in secondary ones. Access to highly skilled professionals is ranked as third benefit for IT outsourcing. Information Technology is a highly specialized area and finding skilled workforce is an important challenge for companies. Many IT firms around the globe have setup facilities to offer a broad range of ITO services ranging from IT infrastructure, data center, helpdesk, web hosting, application development and management (McFarlan, F.W., & Nolan, R.L. 1995). In addition, labor cost in India or China can be lower than, for example, in the Netherlands or USA, with the same quality level.

Regarding cloud computing, since it represents one form of IT outsourcing, the general benefits of ITO naturally are extended to cloud computing. However, there are some specific benefits from cloud computing. For instance, IT implementation process and adoption cycle become much shorter. The start-up and maintenance costs have decreased considerably as far as there is no associated cost for hardware and network infrastructure. Also customer can expect more standard and professional IT services and support. As far as cloud computing is a web-based technology, it gives high level of flexibility for employees since they can access data from servers outside the office. Also cloud computing provides flexibility in implementing changes and new technologies relatively cheap because organizations are not bound to a hard-wired IT infrastructure.

### **6.2.3 ITO risks**

Unfortunately, ITO projects are not always successful and result to failures and dissatisfaction of companies (Weakland, T., & Tumpowsky, B. 2006). Before taking an outsourcing decision, companies need to realize not only benefits but also analyze risks rising with ITO. Unaddressed risks can develop in serious negative impact on the organization; consequently risk assessment and risk management are important components of ITO undertaking (Rao, H. R., Nam, K., & Chaudhury, A. 1996). The risks of contracting for cloud computing include the standard risks associated with any form of IT outsourcing (Clemens, E.K., & Chen, Y. 2011).

Earl (Earl 1996) suggests that possibility of weak management can cause problems with service provider. Even being outsourced, IT operations need to be properly managed. There is still a need of professional IT executive who is capable to pose requirements, manage contracts and negotiate with vendor. IT executive should realize the real price of provided services as far as outsourcers can charge them high fees for new services or changes in the services rendered (Lacity, M.C., & Hirschheim, R. 1993).

An inexperienced staff of outsourcer is another initial risk, described by Earl (Earl 1996). Haven taken the decision of contracting internal IT to the external supplier, company implies

that employees there are much more experienced and skilled. The best way of mitigation of this risk is to choose provider by recommendations or to sound out the situation in the supplier's office. The risk, associated with inexperienced staff risk, is the degrading of a service quality (Aubert, B. A., Patry, M., & Rivard, S. 2003). Poor response time, late updates of software, applications that do not meet the requirements may have a significant negative effect of company's operations.

When cost savings is the primary reason of outsourcing, companies should take into account not only pure costs of outsourcing (that can be much less than keeping services in-house), but also consider hidden costs. Hidden costs sometimes said to be the biggest IT outsourcing problem (Lacity, M.C., Willcocks, L.P., & Feeny, D.F. 1995). The possibility of hidden cost could be in transition or management costs (Aubert, B.A., Patry, M., & Rivard, S 1998). Transition costs include the setup costs, redeployment and relocation costs, which are often underestimated. Secondly, companies may underestimate management costs and time that should be devoted to controlling outsourcing activities. Besides the transition and management costs mentioned by Earl, there is one more type of hidden costs identified by (Nelson, P., Richmond, W., & Seidman, A. 1996). These include contracting costs, such as the costs related to searching and choosing the appropriate vendor, benchmarking the services offered, specifying the legal terms of contracts, negotiating contracts, and resolving disputes. In the case of cloud computing, the hidden costs can lay in vendor's underperformance, while claiming full payment for services. The forms of evading in cloud computing include (1) claim underinvestment in server capability that can be blamed on the network rather than the service provider, or (2) deliberate underinvestment in back-up and other data quality services that can detected only in the event of loss of data or a breach of security (Clemens, E.K., & Chen, Y. 2011).

In many instances innovations in IT play a crucial role in development of companies and enhance their competitive advantages (Jurison 1998). If the company has outsourced IT operations, it should realize that vendors has their limitations and the ability to innovate can be diminished.

By allowing a third party to provide IT services, the company loses control over its sensitive data. Allowing external employees to have access to internal data automatically increases the risk of a data leak or other breach. Cloud computing in particular is concerned about data security. A remote service provider, in this case, stores and processes the data, in addition to transferring it back and forth over public data infrastructure.

Specific risk for cloud computing is high dependency on internet connection. It means that the system is prone to outages and service interruptions at any time. This could occur in the middle of a task or transaction, meaning the action could be delayed or lost entirely if time sensitive.

IT outsourcing is not a risk-free decision. Nevertheless, careful analyses of risk factors and making conscious decision of the adverse effects IT outsourcing can be avoided or reduced.

### 6.3 Relationship between BIA and ITO

Topics of BIA and ITO are heavily studied by scientists and business which is shown in the previous sections. However, only few studies have looked into the relationship between these two concepts. In this chapter, an overview of available literature studying impact of outsourcing decision on alignment is presented.

Cumps et al. (Cumps, B., Viaene, S., Dedene, G., & Vandebulcke, J. 2006) conduct a theoretical study with two imaginary scenarios in order to examine the *likely* impact of outsourcing on Business-IT alignment. In the first exercise, only a small part of ICT is outsourced, therefore, the company maintains control over the ICT strategy. In the second scenario, the whole ICT is sourced to external provider; consequently the company loses control over IT services and relies entirely on the supplier organization. The result of this paper is a theoretical proposition that in organisations where ICT is of high strategic importance and create competitive advantage, outsourcing will lead to both more formal and informal alignment structures and processes between client and supplier organization. However, the authors stand that the paper has only a theoretical proposition which needs to be tested and backed with empirical data.

The research of (Ramanathan 2009) is focused on understanding the change of management in the context of IT services outsourcing. Strategic alignment can be seen as a comprehensive change process which intended purpose is to understand and achieve business objectives. The study has a qualitative nature and aimed at defining the key factors that need to be managed properly in order to achieve value from outsourcing. The major limitation of this study is that it describes the process only for one company from the pharmaceutical industry. It could be interesting to expand the research to other industries and involve more participants. Therefore, results of this study cannot be easily generalized.

A comparative study of Dutta (Dutta 1996) focuses on two banks with diametrically opposite strategies of aligning IT with business. The Bank A manages IT in-house, while Bank B completely outsourced all of its IT functions. In summary, the authors claim that physically, IT can be outsourced, but it is not possible to outsource the management of IT. Thus, different organizations may choose different mechanisms for aligning IT with the business. Nevertheless, they will all require the active participation and involvement of the business management. Unfortunately, the research does not have any empirical evidence, being based completely on the authors' investigations and observations of the situation.

The results of described above studies cannot be generalized and applied on default. First of all, it is hard to draw conclusions and establish the tendency if only one (imaginary) or two studies are considered. When two cases are selected then it could be numerous other factors that influence the results of the study. Secondly, these researches are not supported by empirical data appearing to be just a theoretical proposition instead of complete and extensible scientific research.

Research of Pollalis (Pollalis 2003) derived data taken from 127 global commercial banks. The results show that outsourcing affect performance positively as long as the implementation of IT is consistent with the needs of business. Also, findings imply that banks

with low level of strategic alignment poorly contribute from ITO, whereas banks with high Business-IT alignment can acquire value from ITO. This research appears to be the most related to the topic of the present literature review and goals of the Master Thesis, it is based on both quantitative (survey measures) and anecdotal (case studies and interviews) data. Unfortunately, the authors described neither the methodology of the research nor the undertaken survey, therefore it is impossible to repeat their experiment and justify derived results.

Consulting company Endeavor states that organization has to implement re-alignments or adjustments in order to accommodate effective outsourcing (Endeavor 2011). These re-alignments concern both managers and users. Management might shift focus from “managing operations” to “managing the business relationship with the outsourcers”. The company’s user population in turn will not be able to access outsourced services in the same ways they did when those services came from an in-house unit. The outcome of this paper is the set of recommendations for management and users to make the smoothest and mode effective transition of services to outsource.

(Kambil, A., & Turner, J. 1994) see outsourcing as an alignment mechanism to support major organizational transformation and enable new models of organization. The result of the research is a series of theoretical propositions along with managerial guidelines on the effective use of outsourcing. The authors realize the importance of IT as a strategic component and necessity to establish linkage between organization’s business and information technology strategies. The paper studies how companies can use IT outsourcing as an alignment mechanism. One of the proposed ways is the incentive alignment mechanism for IT in-house team – given the difficulty of monitoring IS projects, there is a little incentive to accomplish the work in less time and with less resources than estimated. Just as IT outsourcing can be used to eliminate opportunism risks and better align internal technical interests with those of management and users. Another motivation for outsourcing can be the need to align capabilities with firm’s strategic intent. This means outsourcing of routine processes to re-allocate skills and talent to strategic projects more related to the firm’s strategy. Being a serious scientific work, this paper provides deeper understanding of the interdependencies between IT outsourcing and company’s strategic decisions. The paper concludes with the set of theoretical principles highlighting new directions for future research.

The paper of (van Lier, J., & Dohmen, T. 2007) studies the influence of strategic alignment and benefit management on IT outsourcing success. For evaluation maturity of alignment the authors have used Luftman’s Alignment Maturity model, while slightly modified the approach – instead of involving IT and business unit executives in determination of strategic alignment level they asked an external observer to fulfill the questionnaire justifying this with the fact that internal observer has fresh and clear vision of the situation. However, in my personal opinion, in order to determine level of strategic alignment the individual should have in-depth knowledge and clear understanding about situation in the company and its processes. Also, some questions in the survey are very specific and require a thorough insight in company activities, such as define level of budgetary control and degree of shared goals with

partners. Benefits management is assessed via 18 statements formulated by authors “without a maturity model, since no such framework is available in the literature”. The article uses case study approach. The data of case studies investigated the conclusion that organizations with a higher level of strategic alignment and a higher level of benefits management reported more IT outsourcing success in terms of benefits achievement.

After studying available sources on the topic of BIA and ITO relationship, it could be seen that most of the authors discontinue their research on theoretical propositions leaving validation of those for future research. However, empirical evidence and validation is a significant part of a scientific research cycle. Additionally, both topics of BIA and ITO are closely related to practice and industries, so they have to be seen not only from theoretical perspective but also linked to practical data. In this context, empirical research helps to integrate research and practice, and prove relevancy of theory by working in a real world environment. Papers with some empirical evidence mostly use case study approach. While case studies provide useful practical insights into the theoretical propositions they cannot be used to construct more general theories to adequately explain influence of ITO decisions on alignment within the company. Next point for critique is that all studies except the last one of (van Lier, J., & Dohmen, T. 2007) did not use any scientifically proven models for Business-IT alignment, in spite of the fact that many of them exist for years and used by scholars (for example, see Section 6.1.2). Further, none of the studies presented in this section propose any practical model or measurement tool that can be used for evaluating impact of IT outsourcing on BIA in organizations. Managers operate with numbers; this language is understandable for them and gives directions for future managerial decisions. When managers investigate effectiveness of IT outsourcing activities they want to have a quantitative instrument which shows them that their previous decisions lead to sustain alignment level or decreased BIA sharply and situation needs to be corrected urgently.

Current review of available literature highlights the low level of maturity regarding the topic related to the impact IT outsourcing to strategic alignment, allowing for discussion and future research.

## **7 Conclusions and Future Work**

In conclusion, a concise summary of findings was described, as well as a rationale for conducting future research. Based on a review of scientific articles, this research presented a comprehensive literature review of Business-IT alignment and IT outsourcing concepts. Systematic literature review framework was used in order to make literature search and selection more structured and scientifically valid.

First, the notion of BIA was elaborated in detail. Mainly, the present literature review showed how alignment definitions relate to each other in addition to listing and presenting them. It was shown that there is no generally accepted definition of IT alignment among the researchers, although BIA is rated as the top priority of IT executives. So, for the current research the definition of (Maes, R., Rijsenbrij, D., Truijens, O., & Goedvolk, H. 2000) is chosen as prevailing. The Business-IT alignment models were described as well as a

structured and comprehensive comparison of diverse Business-IT alignment frameworks was provided. It was justified that Strategic Alignment Maturity Model of Luftman is the best suited for measuring BIA within organizations. Additionally, based on scientific literature, a number of considerable challenges when aligning business and IT were identified.

Another focus of the present review was on the IT outsourcing context. Various definitions were extracted and analyzed. The choice of definition formulated by (McCarthy, I. & Anagnostou, A. 2004) is justified. New emerging trend of cloud computing can be seen as a form of IT outsourcing, therefore it deserved attention in the present review. Before taking decision regarding contracting in-house services to external providers, companies should realize benefits and risks associated with the decision. Both of them were described in order to make the decision more balanced and deliberate for managers. Last but not least, the relationship between BIA and ITO was studied. At the end of the literature exploration, there seems to be a little research elaborating on the effect of IT outsourcing environment of BIA.

The results of the literature review point for direction of future research. The current research shows the lack of deep exploration of the relationship between BIA and IT outsourcing. That area of research is very promising since for most companies IT does not represent a core business and they take decision to outsource IT operations. It can be valuable to gain insights of the behavior of Business-IT alignment in IT outsourcing situation. The future research should aim to make relationship deeper and clearer with the strict and scientific method. Secondly, no specific measurement mechanism for evaluating effect of IT outsourcing on BIA was found in the literature research. From practical perspective, a model for measuring BIA in IT outsourcing environment could make a significant contribution for realizing benefits of subcontracting or conversely returning activities in-house. Such information can provide insights on what activities are most suitable to outsource and which activities better keep in the organization. As a part of scientific work, validation of findings with empirical data and providing future recommendations could be of great help for practitioners. In summary, the main objective of the future research could be formulated as to examine the effect of IT outsourcing on Business-IT alignment.

## Appendix B. Business-IT alignment frameworks

### Strategic alignment model (SAM)

Henderson and Venkatraman can be seen as the founding fathers of business-IT alignment. They developed the strategic alignment model (Henderson, J.C., & Venkatraman, N. 1993) which became the most famous and discussed one among researchers (Avison, D., Jones, J., Powell, P., & Wilson, D. 2004).

SAM consists of four domains, which can be viewed from two dimensions. Across one dimension these four domains can be seen as an explicit separation of business and IT sides. In this case two domains represent the business side – Business Strategy and Organizational Infrastructure and Processes, while IT Strategy and IT Infrastructure describe the IT side. Another dimension represents distinction between the internal and external perspectives of alignment to the organization. External focus shows that organizations must align their business and IT strategies with industry and technology forces. Likewise, businesses must internally align organizational and IT processes and infrastructure. Combining two dimensions, this model defines four blocks, as can be seen in Figure 1.

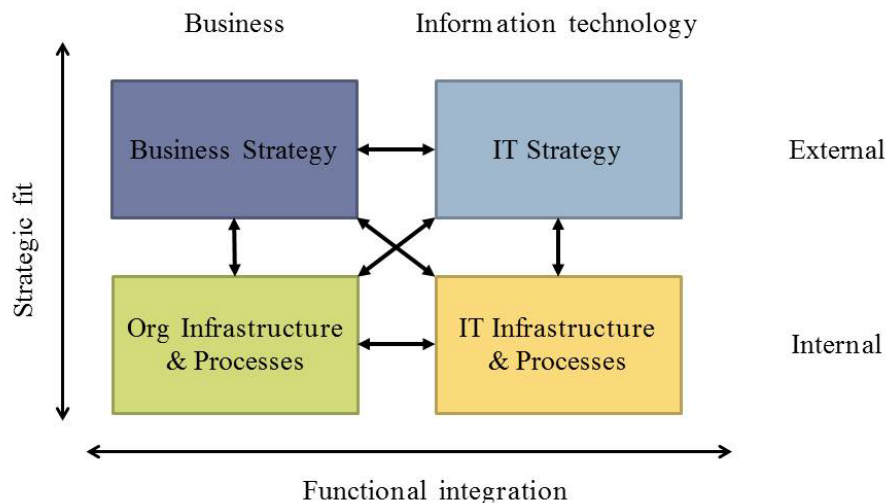


Figure 1. Strategic alignment model (Henderson, J.C., & Venkatraman, N., 1993)

The four domains are linked to each other. Functional integration links the business and IT sides of alignment. The information technology strategies must change as the business strategies change and correspondingly, infrastructure and processes must keep pace as either business or information technology undergoes change (Papp, 2001). Strategic fit deals with the link between the external and internal components. This linkage concentrates on “the need to make business decisions that determine the position of the firm in the market place as well as the infrastructure, processes and skills that determine the internal focus

necessary to achieve the desired market position” (Papp, Strategic Information Technology: Opportunities for competitive advantage 2001).

Each one of the four domains is further subdivided into three components. The resulting framework consists of four linked domains and contains twelve alignment components.

### Strategic alignment maturity model (Luftman)

Luftman (Luftman 2000) proposed a model to evaluate the company’s alignment maturity level. The model is depicted in Figure 2. The maturity of the strategic alignment is impacted by six domains.

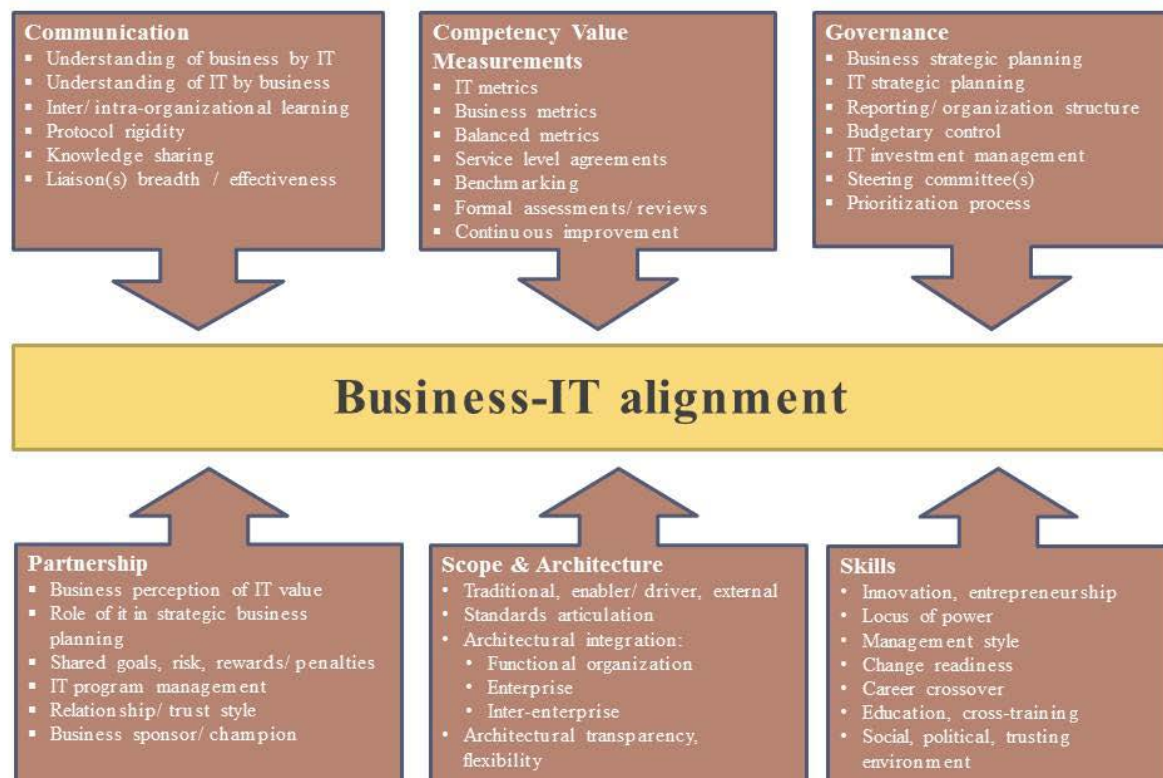


Figure 2. Strategic alignment maturity model (Luftman, 2000)

The brief description of each domain is given below (Luftman, J., Bullen, C.V., Liao, D., Nash, E., & Neumann, C. 2004). Each domain consists of the number of attributes (in total 38 attributes) which are measured on the five-point Likert scale.

*Communications* refers to ensuring effective ongoing knowledge-sharing across organizations. This mutual understanding enables both IT and business parts to realize company’s strategies, plans, risks and priorities.

*Competency and Value Measurement* is related to delivery of business value by aligning IT and business functions and contributing to the business goals of the enterprise. Business



managers do not handle the IT metrics; they want to appreciate how IT investments return value to the business.

*Governance* means the degree to which IT related decisions, such as setting IT priorities and allocating IT resources, are made in cooperation of IT and business managers.

*Partnership* refers to the relationship between business and IT which is a paramount for the smooth alignment. IT managers should participate in defining the business's strategies. Partnership should be based on the mutual trust and sharing risks and rewards.

*Scope and Architecture* measures the extent to which IT is able to provide flexible and transparent infrastructure, provide solutions customizable to customer needs, evaluate and apply emerging technologies effectively, and enable or drive business processes and strategies as a true standard.

*Skills* includes all of the human resources considerations of an organization. This dimension measures standard company's practices as hiring, training, motivating, and goes beyond to the organization's readiness for change, capability for learning, and ability to leverage new ideas.

There are five levels of strategic alignment maturity as presented in Figure 3.

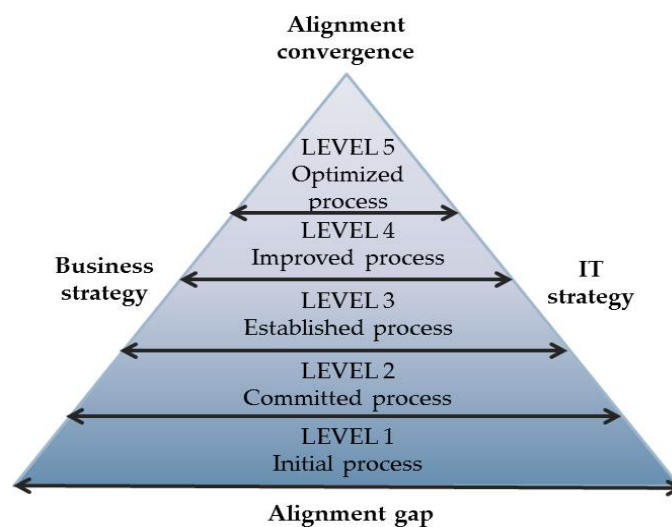


Figure 3. Levels of maturity (Luftman, 2000)

In order to achieve a certain maturity level, the previous levels must be well established as each maturity level characterizes different organizational behaviour (Herbsleb, J., Zubrow, D., Goldenson, D., Hayes, W., & Paulk, M. 1997).

### **Reich and Benbasat model (RBM)**

Reich and Benbasat view alignment as the linkage of intellectual and social aspects of an organization (Reich, B.H. & Benbasat, I. 1996). In the organizational practice intellectual dimension means the high standard of the inter-relation between business and IT plans and

goals. The social dimension is defined as the employees' level of understanding and commitment towards the business and IT mission, objectives, and plans. A measurement method is developed for the latter dimension.

Four factors are recognized to influence alignment along the social dimension: shared domain knowledge, IT history, communication between business and IT executives, and connections between business and IT planning. It is illustrated in Figure 4. Each factor has an influence over alignment (Reich, B.H., & Benbasat, I. 2000):

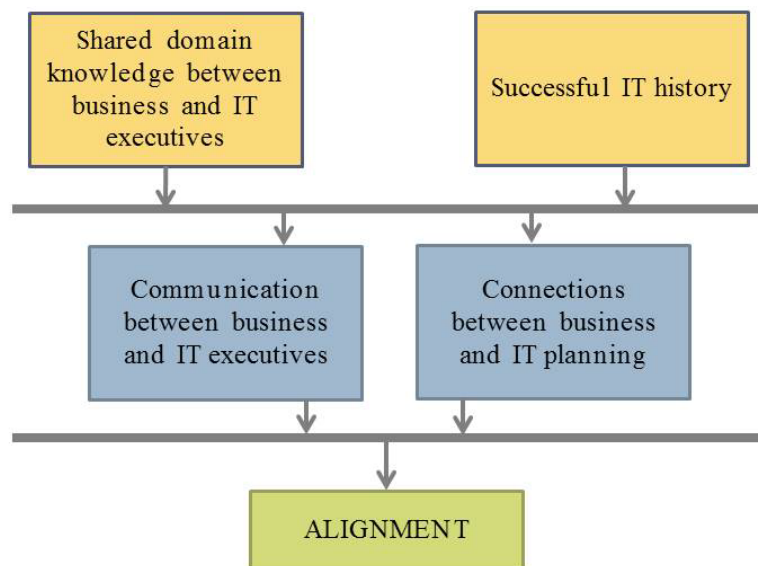


Figure 4. Reich and Benbasat model (Reich, B.H. & Benbasat, I., 1996)

*Shared domain knowledge* is defined as the ability of IT and business executives, at a deep level, to understand and be able to participate in the others' key processes and to respect each other's unique contribution and challenges.

*Successful IT implementation*: the more successful the previous IT implementation the more trust business executives have in IT and the more motivation to communicate with the IT department, which leads to better alignment.

*Communication between business and IT executives*: the communication between business and IT executives can positively affect the level of mutual understanding and alignment.

*Connections between business and IT planning processes*: the more IT executives are involved in business planning the more they can understand and support the business objectives, leading to better alignment.

### **Sabherwal and Chan alignment model (SCAM)**

Sabherwal and Chan (Sabherwal, R., & Chan, Y.E. 2001) elaborated a model of fit between business strategies and IT strategies. Figure 5 represents their model.

Authors study the relationship between business strategy and IT strategy using Miles and Snow's (Miles, R.E., & Snow, C.C. 1978) classification of defender, analyzer, and prospector business strategies. Specifically, the defenders desire cost reduction, the prospectors emphasize flexibility and innovation, and the analysers endeavour to simultaneously achieve efficiency. They have defined business strategy and IT strategy as the two main domains for alignment.

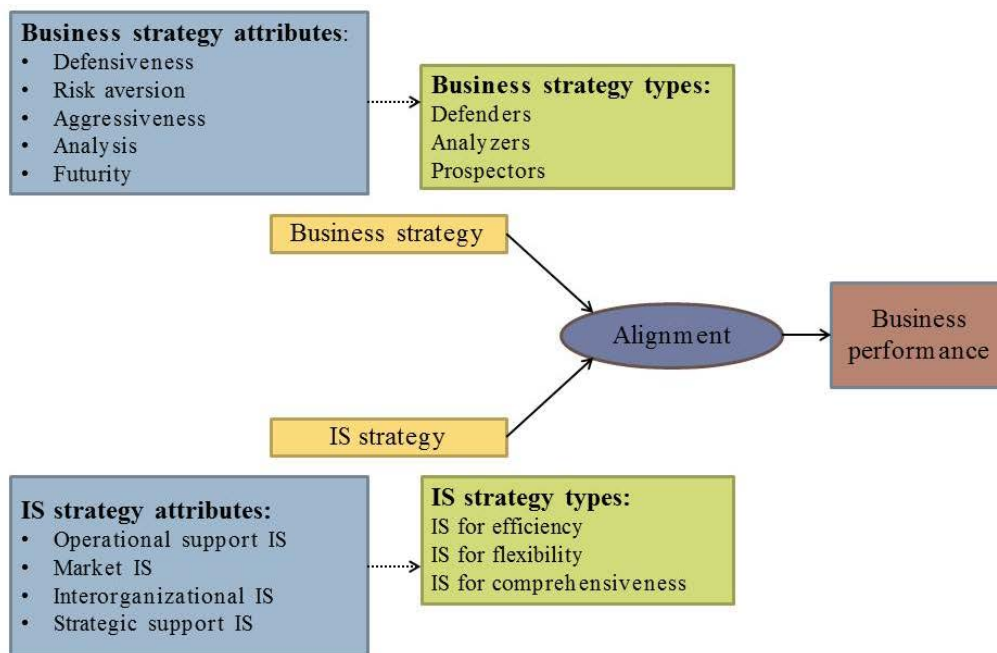


Figure 5. Sabherwal and Chan model (Sabherwal, R., & Chan, Y.E., 2001)

## Appendix C. Comparative analysis of the business-IT alignment frameworks

<b>Model</b> <b>Property</b>	<b>SAM</b>	<b>Luftman</b>	<b>RBM</b>	<b>SCAM</b>
Derived from theory / practice	Th, Pr	Pr	Th	Th
Organizational Size	L/M/S	L/M/S	M/S	M/S
Level of Correspondence	Str/Tac	Str/Tac/Opr	Str/Tac	Str/Tac
Dimensions	4 dimensions 12 components	6 criteria 38 attributes	2 dimensions	2 dimensions
Measurement tool	Not present	Quantitative questionnaire	Data is collected from interviews and company's documentation	
Complexity of Use and Apply	Med	Med	Sim	Com
Th = Theory, Pr = Practice. L = Large, M = Medium, S = Small. Str = Strategic, Tac = Tactical, Opr = Operational. Med = Medium, Com = Complex, Sim = Simple.				

## Appendix D. IT outsourcing maturity models

### eSourcing Capability Model

The eSourcing Capability Model (eSCM) is developed in order to improve the relationship between IT services providers and their customers (Hyder, E. B., Heston, K. M., Paulk, M. C., & Hefley, B. 2009). The eSCM encourage providers and clients to develop more effective relationships and find ways to manage them. The eSCM model is designed in two versions. Each version focuses on one of the parties involved in ITO relationships – one for the Service Provider (eSCM-SP) and one for the client organization (eSCM-CL). These two sub models complement each other and help to derive the full picture of the supplier-client relationships. The eSCM-SP part consists of 84 best practices (in 10 domains, or capability areas) and for each of these practices, a list of activities is provided. On the other hand the eSCM-CL part contains 95 practices (in 17 domains), also with a list of activities (major and sub activities). Figure 1 graphically presents this concept.

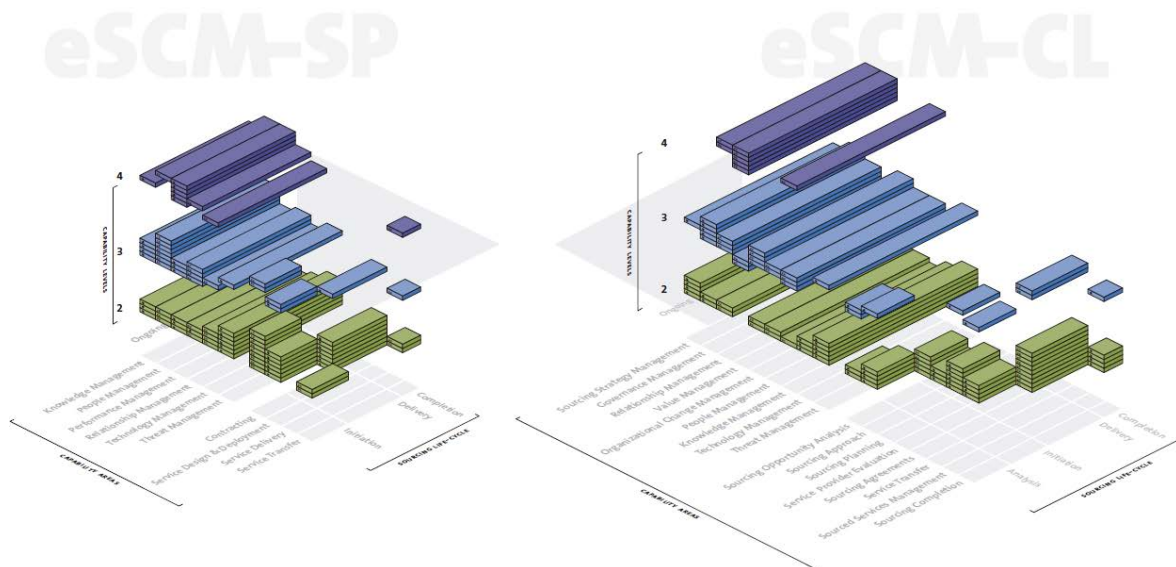


Figure 1. eSourcing Capability Model

(Hyder, E. B., Heston, K. M., Paulk, M. C., & Hefley, B. , 2009)

Capability areas logically group practices with the purpose of simplifying the management of the content. The model provides possibilities for a consistent and transparent assessment of the suppliers / clients capabilities. The eSCM contains a very detailed overview of activities and practices, which makes it very practical oriented. However, at the same time large number of practices and domains is the major drawback of the model. The complexity of the model requires involvement of experts; hence one could doubt its endorsement with small and medium enterprises (SME).

### Gottschalk and Solli-Saether model

(Gottschalk, P., & Solli-Saether, H. 2006) offer a maturity model for IT outsourcing relationships which identifies three stages of ITO relationship: cost stage, resource stage and partnership stage. The model is shown in Figure 2. This model is aimed at 1) understanding of the current stage and preparation of the strategies and 2) moving to higher level in the future (Vasiliauskiene, L., Snieska, V., & Venclauskiene, D. 2011).

At the Cost stage the main goal of organization is a cost reduction. During this stage the question emerges whether contracting of IT services to the external supplier is beneficial in economic sense.

Once the supplier and customer accommodate entire agreement at the Cost stage, they can move into the Resource stage. In this stage, the main concern of an outsourcer is access to the service provider's competence. The resources provided by a supplier enable innovations which are important to customer's long-term survival. Mutual understanding at this stage likely will lead for the outsourcer to gain competitive advantage over its competitors.

Once this mutual understanding is achieved, the two parties can move to the Partnership stage. During the partnership stage the outsourcer and the service provider work together at finally the development of norms and alliance management in order to achieve mutual goals.

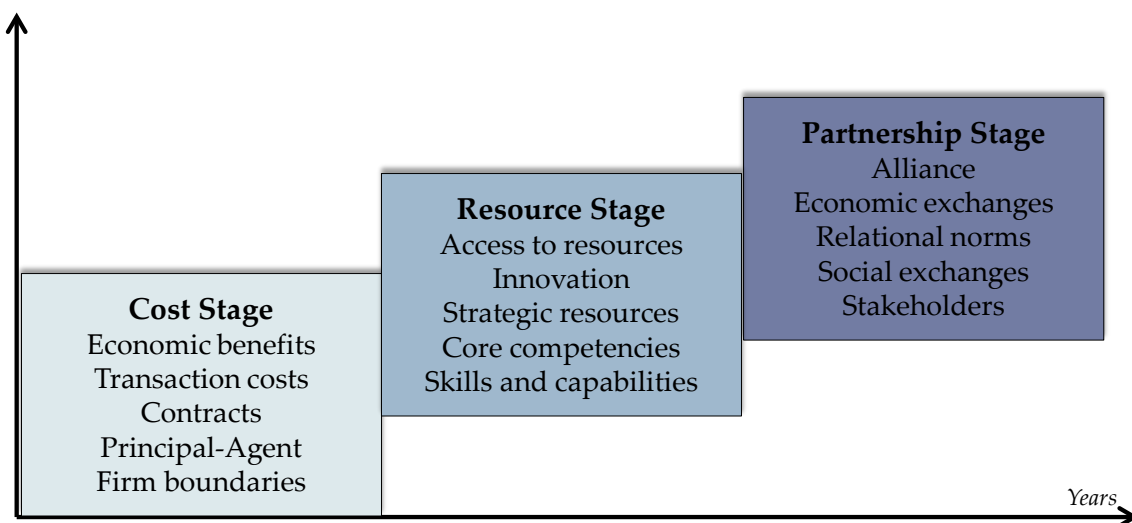


Figure 2. Maturity model for IT outsourcing relationships  
(Gottschalk, P., & Solli-Saether, H., 2006)

Gottschalk and Solli-Saether present eleven theory-based benchmarks for measuring maturity in IT outsourcing relationships. For each of the eleven benchmarks the authors indicate theoretical characteristics for each stage of maturity of the IT outsourcing relationship. This construction is not redundant and very clear for usage. It does not require any specific knowledge and can be easily applied within companies of any size. All benchmarks and relative characteristics per stage can be found in below in Table 1.

Table 1. Benchmarks of Gottschalk and Solli-Saether model

<b>Benchmark variables</b>	<b>Stage I Cost stage</b>	<b>Stage II Resource stage</b>	<b>Stage III Partnership stage</b>
BMK1: economic benefits	Cost minimization and operational efficiency	Business productivity	Business benefits
		Technology innovation	Mutual goals
BMK2: primary transactions	Infrastructure	Applications	Joint investments
BMK3: contractual completeness	Specified obligations	Key competence	Profit sharing
	SLA	Critical projects	Personnel exchanges
		Access to resources	
BMK4: vendor behavior control	Service level agreement	Project performance	Strategy implementation
	Costs	Service quality	
BMK5: demarcation of labor	Procurement	Innovation projects	Continuous innovation
BMK6: core competence management	Client defines technology requirements and business needs	Vendor is regarded as a strategic resource	Co-developing business processes
BMK7: vendor resource exploitation	Excellent operations	Technology initiatives	Complementary capabilities, skills, competences, and methods
BMK8: alliance exploitation	Account manager	Operations manager	Business manager
BMK9: relationship exploitation	Interfirm information sharing	Joint planning	Relational norms
BMK10: social exchange exploitation	Low	Medium	High
BMK11: stakeholder management	Economic interests has priority	Recognizing a number of stakeholder groups	Balancing interests

### **IT outsourcing management maturity model**

Fairchild developed outsourcing management maturity model (Fairchild 2004). This model consists of five levels that offer a set of practices to create a maturing of an outsourcing

relationship: level 1 (Vendor management fundamentals), level 2 (Defined service outcome), level 3 (Measurement), level 4 (Trust) and level 5 (Recognized business value). In the present study the focus is on the two extremes of this model – Level 1 and Level 5. Level 1 represents the worst-case scenario. It is characterized by a narrow contract management focus, misaligned expectations, no existence of the mutual trust and no delivery of a value. In order to reach the highest level 5 the following conditions are required: (1) all outsourcing goals are accomplished; (2) at least 90 percent of new vendor's proposals are cost effective; (3) vendors' new skills are provided whenever demanded by business units; and (4) outsourcing arrangements' contribution to business cost reduction and performance improvement strategies is quantified. Set of conditions should be met to declare presence of a level. These conditions for each level are unambiguously described; hence the model is not difficult in application. The author claims in conclusion that their model is lack of practical usefulness, and model with more detailed metrics for measuring maturity would be more widely accepted.

### **Multisourcing maturity model**

Herz et. al (Herz, T. P., Hamel, F., Uebernickel, F., & Brenner, W. 2011) developed a Multisourcing Maturity Model, where multisourcing is described as the blending of services from multiple internal and external vendors. Multisourcing model is intended to be used in multinational enterprises, in other words, large companies. The model consists of six levels: level 0 (multisourcing incomplete); level 1 (multisourcing prepared); level 2 (multisourcing engaged); level 3 (multisourcing established); level 4 (multisourcing managed); and level 5 (multisourcing optimized). Here level 1 and level 5 are shortly described. It is out of the scope of the current research to describe all multisourcing maturity levels in detail. Level 1 proves that the business entity would be “prepared” to use the multisourcing concept in future, but for the current moment multisourcing governance principles are not established and financial benefits of applying multisourcing have not been estimated yet. Level 5 is the upper extreme of the multisourcing maturity model. At this level a company has achieved objectives of cost reduction, productivity enhancement and complexity reduction. It continuously improves and optimizes multisourcing processes and multisourcing governance principles.



## Appendix E. Comparative analysis of IT outsourcing maturity models

Model Criterion	eSCM	Gottschalk & Solli-Saether	Fairchild	Herz
Used in practice / theory	Pr	Th, Pr	Th	Th
Structural parts	Two versions – for client and provider. Each has its own domains and best practices	Three stages	5 levels	5 levels
Measurability	Provider part consists of 84 best practices (in 10 domains) Client part contains 95 practices (in 17 domains)	11 theoretical benchmarks	Lack of metrics	Not present
Ease to use	Com	Sim	Med	Med
Size of company	L	S / M / L	S / M / L	L
Th = Theory, Pr = Practice. L = Large, M = Medium, S = Small. Med = Medium, Com = Complex, Sim = Simple.				

## Appendix F. Identification of ITO factors by experts

Respondent 1: Software engineer (research department) and business analyst

Reference	Success factors
Study [1]	<ul style="list-style-type: none"> <li>• Shared goals</li> <li>• <b>Good contract management</b></li> <li>• Use service Level Agreements</li> <li>• <b>Performance management</b></li> </ul>
Study [2]	<ul style="list-style-type: none"> <li>• <b>Provider's understanding of clients' objectives</b></li> <li>• Choosing the right provider</li> <li>• A clear idea of what is sought through outsourcing</li> <li>• <b>Provider's attention to clients' specific problems</b></li> <li>• <b>Frequent client-provider contacts</b></li> <li>• A good-value-for-money relationship</li> <li>• Top management's support and involvement</li> <li>• Proper contract structuring</li> </ul>
Study [3]	<ul style="list-style-type: none"> <li>• <b>The provider must understand the client's objectives</b></li> <li>• Top management support and involvement</li> <li>• Choosing the right provider</li> <li>• <b>Frequency of client-provider contacts</b></li> <li>• <b>To pay careful attention to the clients specific problems</b></li> <li>• To make a proper drawn-up contract</li> <li>• To know what is intended with the use of outsourcing</li> <li>• A good value for money relationship</li> </ul>
Study [4]	<ul style="list-style-type: none"> <li>• Core competence management. The organization has to define its IT needs and manage IT services from the vendor.</li> <li>• <b>Transaction cost reduction</b></li> <li>• Contract completeness</li> <li>• <b>Production cost reduction</b></li> <li>• Alliance exploitation. The organization has to develop experience with alliances, develop alliance managers and develop the ability to identify potential vendors.</li> <li>• Relationship exploitation</li> <li>• Vendor behavior control</li> <li>• Demarcation of labor. The organization has to implement a strict and rigid division of labor between the vendor and itself.</li> <li>• Stakeholder management</li> </ul>
Study [5]	<ul style="list-style-type: none"> <li>• Commitment from top management</li> <li>• <b>Clear aims and objectives</b></li> <li>• <b>Confidence in the expertise and knowledge of the service provider</b></li> <li>• Capability to conduct and control</li> <li>• <b>Change management</b></li> <li>• Continuity and succession planning</li> <li>• <b>Knowledge sharing</b></li> <li>• Contract scale</li> </ul>

Reference	Success factors
	<ul style="list-style-type: none"> <li>• Contract flexibility</li> <li>• Cultural fit (client / provider)</li> </ul>
Study [6]	<ul style="list-style-type: none"> <li>• <b>Communication</b></li> <li>• <b>Knowledge transferring</b></li> <li>• <b>Risk management</b></li> <li>• Contract management</li> <li>• Vendor selection</li> <li>• Involvement of top-level management</li> </ul>
Study [7]	<ul style="list-style-type: none"> <li>• <b>Delivery performance</b></li> <li>• Good contract management</li> <li>• Strong relationships</li> <li>• <b>Understand the customer</b></li> <li>• Use service level agreements</li> <li>• Maintain control</li> <li>• <b>Be flexible</b></li> <li>• <b>Communicate</b></li> <li>• Technical expertise</li> <li>• Integrate the services</li> </ul>
Study [8]	<ul style="list-style-type: none"> <li>• <b>Select vendor</b></li> <li>• <b>Prepare outsourcing strategy</b></li> <li>• Performance management</li> <li>• Manage ITO</li> <li>• Continuous improvement</li> </ul>
Study [9]	<ul style="list-style-type: none"> <li>• Delivery performance</li> <li>• Communication client / vendor</li> <li>• Added value</li> <li>• <b>Planning</b></li> <li>• <b>Monitoring and control</b></li> </ul>
Study [10]	<ul style="list-style-type: none"> <li>• Vendor capability (technical ability, familiarity and experience of the vendor with the customer's industry and business processes, etc.)</li> <li>• Internal readiness (organizations wishing to achieve success in outsourcing must first embark on a comprehensive and detailed preparation process to ensure their readiness in adopting outsourcing)</li> <li>• <b>Similarity of culture between vendor and customer</b></li> </ul>
Study [11]	<ul style="list-style-type: none"> <li>• Strategic analysis</li> <li>• Selecting the providers</li> <li>• <b>Managing the relationship</b></li> </ul>
Study [12]	<ul style="list-style-type: none"> <li>• <b>Partnership</b></li> <li>• Organizational structure</li> <li>• Functional scope (what services are outsourced)</li> <li>• Vendor construction (single or multiple ITO providers)</li> <li>• <b>Governance</b></li> </ul>

Reference	Success factors
	<ul style="list-style-type: none"> <li>• ITO experience (how long engaged in ITO relationships)</li> <li>• <b>Contract</b></li> <li>• Project management</li> <li>• Service level management</li> <li>• <b>Transition (support of end users)</b></li> </ul>

Respondent 2: Software architect

Reference	Success factors
Study [1]	<ul style="list-style-type: none"> <li>• Shared goals</li> <li>• Good contract management</li> <li>• Use service Level Agreements</li> <li>• Performance management</li> </ul>
Study [2]	<ul style="list-style-type: none"> <li>• Provider's understanding of clients' objectives</li> <li>• Choosing the right provider</li> <li>• A clear idea of what is sought through outsourcing</li> <li>• Provider's attention to clients' specific problems</li> <li>• Frequent client-provider contacts</li> <li>• A good-value-for-money relationship</li> <li>• Top management's support and involvement</li> <li>• Proper contract structuring</li> </ul>
Study [3]	<ul style="list-style-type: none"> <li>• The provider must understand the client's objectives</li> <li>• Top management support and involvement</li> <li>• Choosing the right provider</li> <li>• Frequency of client-provider contacts</li> <li>• To pay careful attention to the clients specific problems</li> <li>• To make a proper drawn-up contract</li> <li>• To know what is intended with the use of outsourcing</li> <li>• A good value for money relationship</li> </ul>
Study [4]	<ul style="list-style-type: none"> <li>• Core competence management. The organization has to define its IT needs and manage IT services from the vendor.</li> <li>• Transaction cost reduction</li> <li>• Contract completeness</li> <li>• Production cost reduction</li> <li>• Alliance exploitation. The organization has to develop experience with alliances, develop alliance managers and develop the ability to identify potential vendors.</li> <li>• Relationship exploitation</li> <li>• Vendor behavior control</li> <li>• Demarcation of labor. The organization has to implement a strict and rigid division of labor between the vendor and itself.</li> <li>• Stakeholder management</li> </ul>
Study [5]	<ul style="list-style-type: none"> <li>• Commitment from top management</li> <li>• Clear aims and objectives</li> </ul>

Reference	Success factors
	<ul style="list-style-type: none"> <li>• Confidence in the expertise and knowledge of the service provider</li> <li>• Capability to conduct and control</li> <li>• Change management</li> <li>• Continuity and succession planning</li> <li>• Knowledge sharing</li> <li>• Contract scale</li> <li>• Contract flexibility</li> <li>• Cultural fit (client / provider)</li> </ul>
Study [6]	<ul style="list-style-type: none"> <li>• Communication</li> <li>• Knowledge transferring</li> <li>• Risk management</li> <li>• Contract management</li> <li>• Vendor selection</li> <li>• Involvement of top-level management</li> </ul>
Study [7]	<ul style="list-style-type: none"> <li>• Delivery performance</li> <li>• Good contract management</li> <li>• Strong relationships</li> <li>• Understand the customer</li> <li>• Use service level agreements</li> <li>• Maintain control</li> <li>• Be flexible</li> <li>• Communicate</li> <li>• Technical expertise</li> <li>• Integrate the services</li> </ul>
Study [8]	<ul style="list-style-type: none"> <li>• Select vendor</li> <li>• Prepare outsourcing strategy</li> <li>• Performance management</li> <li>• Manage ITO</li> <li>• Continuous improvement</li> </ul>
Study [9]	<ul style="list-style-type: none"> <li>• Delivery performance</li> <li>• Communication client / vendor</li> <li>• Added value</li> <li>• Planning</li> <li>• Monitoring and control</li> </ul>
Study [10]	<ul style="list-style-type: none"> <li>• Vendor capability (technical ability, familiarity and experience of the vendor with the customer's industry and business processes, etc.)</li> <li>• Internal readiness (organizations wishing to achieve success in outsourcing must first embark on a comprehensive and detailed preparation process to ensure their readiness in adopting outsourcing)</li> <li>• Similarity of culture between vendor and customer</li> </ul>
Study [11]	<ul style="list-style-type: none"> <li>• Strategic analysis</li> <li>• Selecting the providers</li> </ul>

Reference	Success factors
	<ul style="list-style-type: none"> <li>• Managing the relationship</li> </ul>
Study [12]	<ul style="list-style-type: none"> <li>• Partnership</li> <li>• Organizational structure</li> <li>• Functional scope (what services are outsourced)</li> <li>• Vendor construction (single or multiple ITO providers)</li> <li>• Governance</li> <li>• ITO experience (how long engaged in ITO relationships)</li> <li>• Contract</li> <li>• Project management</li> <li>• Service level management</li> <li>• Transition (support of end users)</li> </ul>

Respondent 3: Lead developer, project manager

Reference	Success factors
Study [1]	<ul style="list-style-type: none"> <li>• Shared goals</li> <li>• Good contract management</li> <li>• Use service Level Agreements</li> <li>• Performance management</li> </ul>
Study [2]	<ul style="list-style-type: none"> <li>• Provider's understanding of clients' objectives</li> <li>• Choosing the right provider</li> <li>• A clear idea of what is sought through outsourcing</li> <li>• Provider's attention to clients' specific problems</li> <li>• Frequent client-provider contacts</li> <li>• A good-value-for-money relationship</li> <li>• Top management's support and involvement</li> <li>• Proper contract structuring</li> </ul>
Study [3]	<ul style="list-style-type: none"> <li>• The provider must understand the client's objectives</li> <li>• Top management support and involvement</li> <li>• Choosing the right provider</li> <li>• Frequency of client-provider contacts</li> <li>• To pay careful attention to the clients specific problems</li> <li>• To make a proper drawn-up contract</li> <li>• To know what is intended with the use of outsourcing</li> <li>• A good value for money relationship</li> </ul>
Study [4]	<ul style="list-style-type: none"> <li>• Core competence management. The organization has to define its IT needs and manage IT services from the vendor.</li> <li>• Transaction cost reduction</li> <li>• Contract completeness</li> <li>• Production cost reduction</li> <li>• Alliance exploitation. The organization has to develop experience with alliances, develop alliance managers and develop the ability to identify potential vendors.</li> </ul>

Reference	Success factors
	<ul style="list-style-type: none"> <li>• Relationship exploitation</li> <li>• Vendor behavior control</li> <li>• Demarcation of labor. The organization has to implement a strict and rigid division of labor between the vendor and itself.</li> <li>• Stakeholder management</li> </ul>
Study [5]	<ul style="list-style-type: none"> <li>• Commitment from top management</li> <li>• Clear aims and objectives</li> <li>• Confidence in the expertise and knowledge of the service provider</li> <li>• Capability to conduct and control</li> <li>• Change management</li> <li>• Continuity and succession planning</li> <li>• Knowledge sharing</li> <li>• Contract scale</li> <li>• Contract flexibility</li> <li>• Cultural fit (client / provider)</li> </ul>
Study [6]	<ul style="list-style-type: none"> <li>• Communication</li> <li>• Knowledge transferring</li> <li>• Risk management</li> <li>• Contract management</li> <li>• Vendor selection</li> <li>• Involvement of top-level management</li> </ul>
Study [7]	<ul style="list-style-type: none"> <li>• Delivery performance</li> <li>• Good contract management</li> <li>• Strong relationships</li> <li>• Understand the customer</li> <li>• Use service level agreements</li> <li>• Maintain control</li> <li>• Be flexible</li> <li>• Communicate</li> <li>• Technical expertise</li> <li>• Integrate the services</li> </ul>
Study [8]	<ul style="list-style-type: none"> <li>• Select vendor</li> <li>• Prepare outsourcing strategy</li> <li>• Performance management</li> <li>• Manage ITO</li> <li>• Continuous improvement</li> </ul>
Study [9]	<ul style="list-style-type: none"> <li>• Delivery performance</li> <li>• Communication client / vendor</li> <li>• Added value</li> <li>• Planning</li> <li>• Monitoring and control</li> </ul>
Study [10]	<ul style="list-style-type: none"> <li>• Vendor capability (technical ability, familiarity and experience of the vendor with the customer's industry and business processes, etc.)</li> <li>• Internal readiness (organizations wishing to achieve success in</li> </ul>

Reference	Success factors
	<p data-bbox="427 239 1393 360">outsourcing must first embark on a comprehensive and detailed preparation process to ensure their readiness in adopting outsourcing)</p> <ul data-bbox="387 367 1150 405" style="list-style-type: none"> <li data-bbox="387 367 1150 405">• Similarity of culture between vendor and customer</li> </ul>
Study [11]	<ul data-bbox="387 412 802 539" style="list-style-type: none"> <li data-bbox="387 412 671 450">• Strategic analysis</li> <li data-bbox="387 456 751 495">• Selecting the providers</li> <li data-bbox="387 501 802 539">• Managing the relationship</li> </ul>
Study [12]	<ul data-bbox="387 546 1230 967" style="list-style-type: none"> <li data-bbox="387 546 592 584">• Partnership</li> <li data-bbox="387 591 778 629">• Organizational structure</li> <li data-bbox="387 636 1107 674">• Functional scope (what services are outsourced)</li> <li data-bbox="387 680 1209 719">• Vendor construction (single or multiple ITO providers)</li> <li data-bbox="387 725 596 763">• Governance</li> <li data-bbox="387 770 1230 808">• ITO experience (how long engaged in ITO relationships)</li> <li data-bbox="387 815 549 853">• Contract</li> <li data-bbox="387 860 715 898">• Project management</li> <li data-bbox="387 904 799 943">• Service level management</li> <li data-bbox="387 949 895 967">• Transition (support of end users)</li> </ul>



## Appendix G. Examination of IT outsourcing factors

Factor \ Study	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	M1	M2	M3	Score
Contract mgt.	■	■	■		■	■	■					■	■	■	■	10
Performance mgt.	■	■	■	■			■	■	■			■	■	■	■	11
Preparation step		■	■		■	■		■		■	■	■	■	■	■	10
Outsourcing strategy	■		■		■			■	■		■	■	■	■	■	10
Governance			■	■	■	■	■	■	■			■	■	■	■	11
Change mgt.					■								■	■		3
Knowledge mgt.				■	■	■							■	■		5
Risk mgt.						■	■						■	■		4
Relationship mgt.	■	■	■	■	■	■	■		■	■	■	■	■	■	■	14
Internal readiness										■		■		■	■	4

## Appendix H. Employee engagement questions

### **Perceived Organizational Trust**

1. We believe in the strategies laid out by our senior management.
2. When employees express their point of view, they will be truly heard.
3. We trust each other to complete a job.
4. We are encouraged to share our ideas and feelings with others.
5. Conflicts in our views in company strategic directions will be dealt with in an appropriate and professionalism.
6. IT strategies are an important part of business strategies.
7. Business strategies can only be successful through a good support from IT strategies.
8. We believe that our ideas will be heard.
9. It is not a problem for us to provide ideas on feedbacks on companies' strategies.
10. All employees are responsible and will perform their job regardless of their department.

### **Perceived communications on business-IT strategies to employees**

11. I am kept informed about major changes occurring within the company.
12. Information is shared in a timely manner from the company.
13. I am kept informed about reasons behind company decisions.
14. The information I receive from the company is complete.
15. I am kept informed about major changes occurring within my business/function.
16. Information is shared in a timely manner from my business/function.
17. I am kept informed about reasons behind business/function decisions.
18. I have the information needed to perform my job effectively.
19. The information I receive from my business/function is complete.
20. My business/function does a good job of communicating information to all employees.

### **Perceived employee commitment to business-IT strategies**

21. I am willing to put in a great deal of effort beyond that which is normally expected in order to help the business be successful.
22. I am committed to the long term strategies set by my organization.
23. I feel loyal to the business.
24. I find my values and goals are compatible with the business values and goals.
25. I am proud to tell others that I am part of the business.
26. There is much to be gained by participating with the business on a long-term basis.
27. I agree with the business' goals, plans and policies.
28. I really do care about the fate of the business.
29. Deciding to be involved with the business has had a positive influence on my life.
30. I understand and support decisions regarding the future of the business.

### **Perceived knowledge of business-IT strategies**

31. People in our organization frequently spend time discussing customers future needs, visions and companies' strategies.
32. When people in our organization need information, they know who exactly to ask.
33. There are regular meetings between departments to discuss trends and developments.
34. We keep a database of customer information, business and IT strategies that is easy to access.
35. Information about customer satisfaction is disseminated to all levels of our organization.
36. We encourage people with similar interest to work together.
37. We manage to keep up-to-date with technological developments that could affect our business.
38. Information on new technological developments that affect our business is circulated.
39. We are quick to decide on how to respond to changes in technology.

## Appendix I. Attributes of Technology scope dimension

### **Factor 1 for IS Strategy – Operational Support Systems**

1. Our IS improve the efficiency of our day-to-day business operations.
2. Our IS support effective coordination across functions (e.g., marketing, manufacturing) and product lines.
3. Our IS provide us with the facts and figures we need to support our day--to-day decision making.
4. Our IS enable us to develop detailed analyses of our present business situation.
5. Our IS provide sufficiently detailed information to support prudent decision making.
6. Our IS support detailed analyses of major business decisions.

### **Factor 2 for IS Strategy – Market Information Systems**

7. Our IS assist us in setting our prices relative to the competition.
8. Our IS help us introduce new products and/or services in our markets.
9. Our IS help us monitor changes in our market share.
10. Our IS permit us to rapidly adjust our prices.

### **Factor 3 for IS Strategy – Interorganizational Systems**

11. Our IS enable us to develop stronger links with suppliers.
12. Our IS enhance our ability to negotiate with our suppliers.
13. Our IS enhance our ability to negotiate with our customers.
14. Our IS enable us to develop stronger links with customers.

### **Factor 4 for IS Strategy – Strategic Decision Support Systems**

15. Our IS facilitate strategic business planning.
16. Our IS help us model possible future outcomes of alternative courses of action.
17. Our IS are used to forecast key indicators of business performance.

## Appendix J. Dimensions, attributes and levels of Luftman's model

	<b>Attribute</b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>	<b>Level 4</b>	<b>Level 5</b>
<b>Communication</b>	Understanding of business by IT	IT management not aware	Limited IT awareness	Senior and mid-management	Pushed down through organization	Pervasive
	Understanding of IT by business	Business management not aware	Limited business awareness	Emerging business awareness	Business aware of potential	Pervasive
	Inter/intra-organizational learning	Casual, ad-hoc	Informal	Regular, clear	Unified, bonded	Strong and structured
	Protocol rigidity	Command and control	Limited relaxed	Emerging relaxed	Relaxed, informal	Informal
	Knowledge sharing	Ad-hoc	Semi structured	Structured around key processes	Institutionalized	Extra-enterprise
	Liaison(s) breadth / effectiveness	None or ad-hoc	Limited tactical technology based	Formalized, regular meetings	Bonded, effective at all internal levels	Extra-enterprise
	IT metrics	Technical; Not related to business	Cost efficiency	Traditional financial	Cost effectiveness	Extended to external partners
	Business metrics	Ad-hoc; Not related to IT	At the functional organization	Traditional financial	Customer based	Extended to external partners

	Attribute	Level 1	Level 2	Level 3	Level 4	Level 5
Value	Balanced metrics	Ad-hoc metrics unlinked	Business and IT metrics unlinked	Emerging business and IT metrics linked	Business and IT metrics linked	Business, partners and IT metrics linked
	Service level agreements	Sporadically present	Technical at the functional level	Emerging across the enterprise	Enterprise wide	Extended to external partners
Competency Measurements	Benchmarking	Not generally practiced	Informal	Focused on specific processes	Routinely performed	Routinely performed with partners
	Formal assessments/reviews	None	Some; Typically for problems	Emerging formality	Formally performed	Routinely performed
	Continuous improvement	None	Minimum	Emerging	Frequently	Routinely performed
Governance	Business strategic planning	Ad-hoc	Basic planning at the functional level	Some inter-organizational planning	Managed across the enterprise	Integrated across and outside the enterprise
	IT strategic planning	Ad-hoc	Functional tactical planning	Focused planning, some inter-organizational	Managed across the enterprise	Integrated across and outside the enterprise
	Reporting/organization structure	Central/Decentral; CIO reports to CFO	Central/Decentral; Some co-location; CIO reports to CFO	Central/Decentral; Some federation; CIO reports to COO	Federated; CIO reports to COO or CEO	Federated; CIO reports to CEO
	Budgetary control	Cost Centre; Erratic spending	Cost Centre by functional	Cost Centre; Some investments	Investment Centre	Investment Centre; Profit

	Attribute	Level 1	Level 2	Level 3	Level 4	Level 5
			organization			Centre
	IT investment management	Cost based; Erratic spending	Cost based; Operations and maintenance focused	Traditional; Process enabler	Cost effectiveness; Process driver	Business value; Extended to business partners
	Steering committee(s)	Not formal/regular	Periodic organized communication	Regular clear communication	Formal effective committees	Partnership
	Prioritization process	Reactive	Occasional responsive	Mostly responsive	Value add, responsive	Value added partner
Partnership	Business perception of IT value	IT perceived as a cost of business	IT emerging as an asset	IT is seen as an asset	IT is part of the business strategy	IT business co-adaptive
	Role of IT in strategic business planning	No seat at the business table	Business process enabler	Business process driver	Business strategy enabler/driver	IT Business co-adaptive
	Shared goals, risk, rewards/penalties	IT takes risk with little reward	IT takes most of the risk with little reward	Risk tolerant; IT some reward	Risk acceptance and rewards shared	Risk and rewards shared
	IT program management	Ad-hoc	Standards defined	Standards adhered	Standards evolved	Continuous improvement
	Relationship/trust style	Conflict/Minimum	Primarily transactional	Emerging valued service provider	Valued service provider	Valued partnership
	Business sponsor/champion	None	Limited at the functional organization	At the functional organization	At the HQ level	At the CEO level
& Archite	Traditional, enabler/driver, external	Traditional (e.g., accounting, email)	Transaction ( e.g., ESS, DSS)	Expanded scope (e.g., business	Redefined scope (business process	External scope; Business

	Attribute	Level 1	Level 2	Level 3	Level 4	Level 5
				process enabler)	driver)	strategy driver/enabler
	Standards articulation	None or ad-hoc	Standards defined	Emerging enterprise standards	Enterprise standards	Inter-enterprise standards
	Architectural integration: Functional organization	No formal integration	Early attempts at integration	Integrated across the organization	Integrated with partners	Evolved with partners
	Architectural integration: Enterprise	No formal integration	Early attempts at integration	Standard enterprise architecture	Integrated with partners	Evolved with partners
	Architectural integration: Inter-enterprise	No formal integration	Early concept testing	Emerging with key partners	Integrated with key partners	Evolved with all partners
	Architectural transparency, flexibility	None	Limited	Focused on communications	Effective emerging technology management	Across the infrastructure
	Innovation, entrepreneurship	Discouraged	Dependent on functional organization	Risk tolerant	Enterprise, partners, and IT managers	The norm
<b>Skills</b>	Locus of power	In the business	Functional organization	Emerging across the organization	Across the organization	All executives, including CIO and partners
	Management style	Command and control	Consensus-based	Results based	Profit/value based	Relationship based
	Change readiness	Resistant to change	Dependent on functional organization	Recognized need for change	High, focused	High, focused



	<b>Attribute</b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>	<b>Level 4</b>	<b>Level 5</b>
	Career crossover	None	Minimum	Dependent on functional organization	Across the functional organization	Across the enterprise
	Education, cross-training	None	Minimum	Dependent on functional organization	At the functional organization	Across the organization
	Social, political, trusting environment	Minimum	Primarily transactional	Emerging valued service provider	Valued service provider	Valued partnership

## Appendix K. Levels of business-IT alignment

**Level 1: Initial or ad-hoc processes.** Level 1 is the lowest level of strategic alignment. At this level IT and business generally have low communication and also poorly perceive value contribution of each other. Their performance metrics are seen separately – technical measures for IT unit, while business metrics for business unit. IT is focused on traditional IT functions as back-office support and does not consider value contribution.

**Level 2: Committed processes.** Organizations at Level 2 are committed to begin process towards strategic alignment maturity. IT is viewed as an asset of the organization. The business and IT have limited understanding of each other's' responsibilities and roles. Nevertheless, IT metrics are still technical and cost-oriented, and they are not linked to business metrics. Interactions between IT and the business tend to be transaction-based rather than partnership-based.

**Level 3: Established, focused processes.** In Level 3 IT assets become more integrated in the company's strategy. Senior and mid-level IT management understand the business, and the business's understanding of IT is emerging. IT expenses are controlled by budgets, and IT is still seen as a cost centre. But awareness of IT's "investment potential" is emerging.

**Level 4: Improved, managed processes.** At Level 4 IT and business gain mutual understanding and knowledge sharing. The gap between business strategy and IT strategy tends to decrease. IT is seen as value centre instead of cost centre. Here is focus on driving business process enhancement to gain sustainable competitive advantage. Strategic business and IT planning processes are managed across the enterprise. The business shares risks and rewards with IT by providing effective partnership.

**Level 5: Optimized processes.** Organizations at Level 5 have optimized strategic business-IT alignment with integration of strategic business planning and IT planning. Alignment goes beyond the enterprise by extending performance metrics to external partners and customers. Relationships between the business and IT are informal, and knowledge is shared with external partners. Management style is based on partnership.

## Appendix L. Interview questions

### Company

1. In what industry does your company operate?
2. What is the total number of employees?
3. If transnational – how many employees are in the Dutch division?
4. Could you describe the organizational structure?
5. What is the place of IT department? Centralized / decentralized?
6. What is the size of IT department? If transnational – size of the Dutch division?
7. If the company is transnational then who defines IT policy? Centralized / decentralized?
8. What is the IT budget?

### Business-IT alignment

9. Is there a notion of business-IT alignment in the company?
10. Do you think that business and IT strategies are aligned?
11. Does IT perform only technical tasks, such as network monitoring, maintenance of information systems, solving technical requests from end-users?
12. Is there a special role for alignment business and IT objectives?
13. When business settle a new task for IT, does IT or business has a final say?
14. Is there a revision of actions for alignment policy?

### Communication

15. Do you have examples of communication problems between business and IT (e.g. escalation, situations, sharing of information)
16. Is there sufficient input from senior management regarding IT projects?

### Performance

17. What is your view of IT performance, do you think IT can do better?
18. Do you think that the company gets maximum value from IT?
19. Do you use service level agreements?
20. If yes, how do you measure your services against a SLA?

### Governance

21. How does the company choose the most valuable IT investments?
22. Is it based on the best value for business?

### Partnership

23. Does IT fulfill its role in achieving strategic business goals?
24. Do business and IT acquire mutual trust?

25. How do they share risks and rewards? Any examples?
26. In what areas do you see business and IT work well together and where not?
27. Do you think IT should be more involved in business-related decisions?

### **Outsourcing:**

28. What services are outsourced in the cloud?
29. What drove that decision to outsource services in the cloud?
30. What are the main objectives?
31. How long engaged in ITO relationships?
32. Does business processes / strategy of the vendor impact strategy within the company?
33. The statement is: *Company transfers also business functions to third party which can significantly affect alignment in the organization. As a result, alignment maturity is harder to achieve and manage.*  
Do you agree with it?
34. How would you describe your relationships with service provider?  
Cost reduction: a lot of negotiations, the main goal is cost savings  
Resource stage: access to the service provider`s competence. The resources provided by a supplier enable innovations  
Partnership stage: work together to achieve mutual goals.
35. In the case of conflict situations, do you refer to contract or try to solve problems together? Based on mutual trust? Or contract based?
36. Do you monitor and audit service provider`s performance on a regular basis?
37. Do you expect proactive behaviour from the service provider? Such as offer of new services and solutions.
38. How do you contact with provider? Only when something happens?
39. How did you choose vendor?
40. Have you changed provider? If yes, then why?
41. Did you explicitly elicit possible risks? Do you have risk management?
42. Do you have complaints about service quality of your provider?

### **Model**

43. Was it easy to apply the model? Too many questions? Any recommendations to improve?
44. What ITO factors are especially important when we talk about cloud computing?
45. Do you think that maturity of ITO can be identified through the derived factors?
46. If not, then what other approach would be more valid?

## Appendix M. Questionnaire

# Questionnaire – Impact of IT Outsourcing on Business-IT Alignment

The thesis topic is “Towards Business-IT Alignment in IT Outsourcing Context”.

The main objective of the research is to investigate impact of IT outsourcing activities on the internal alignment in organizations (see the model in the bottom of the page).

Furthermore, the model needs to be validated via survey. For the previous reason, I kindly ask for your help to complete the online questionnaire. The survey will take approximately 15 minutes to complete. I would appreciate your completing the questionnaire by DATE.

Please, do not be overwhelmed by the amount of questions. All of them are easy to answer and you just need to choose the most accurate option.

Please, be assured that your responses will be treated confidentially.

This questionnaire consists of three parts:

- (1) Profile information
- (2) Assessment of business-IT alignment maturity
- (3) Assessment IT outsourcing success.

Please ensure that you complete all of the questions.

Although there is no time limit for this questionnaire, please work quickly through the statements as they are presented. It is usually our first feeling that is most accurate in this type of questionnaire.

Some reminder points before you start the questionnaire:

- though the questionnaire is rather straightforward, we advise you to read instructions in the beginning of the page;
- work as quickly and honestly as you can;
- do not spend too long on any one statement;
- if you are not sure of your response, select your best choice.

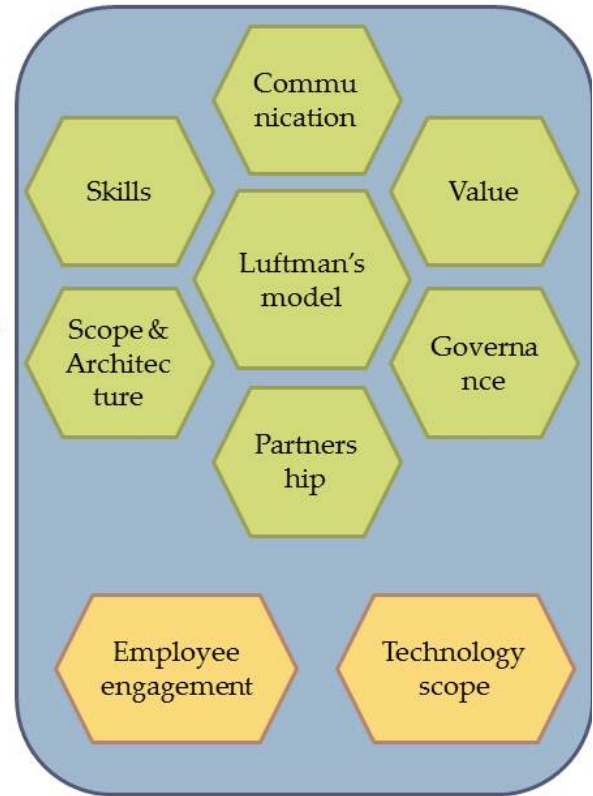
If you have any questions or comments regarding this questionnaire, please do not hesitate to contact me [e.sabelnikova@student.tue.nl](mailto:e.sabelnikova@student.tue.nl)

When you are ready to begin, please click on the "Continue" button.

## IT outsourcing



## Business-IT alignment



Continue »

7% completed

# Questionnaire – Impact of IT Outsourcing on Business-IT Alignment

\*Required

## Part 1. Profile information

Indicate industry your company operates in

- Chemical
- Consulting
- Consumer products
- Education
- Energy
- Entertainment & Leisure
- Finance
- Healthcare
- Industrial goods
- Manufacturing
- Public sector
- Real estate
- Technology (electronics, internet, software, telecommunications, automotive)
- Transportation
- Other:

Approximately how many employees work at your company? \*

Number of employees

- 1-50
- 50-200
- 200-500
- 500-2000
- 2000+
- Don't know / Not sure

What is your function? \*

- Business
- Information Technology
- Other:

Indicate your role in the company \*

- Non-managerial
- Manager



- Senior Manager
- Director
- Top Management
- Other:

**How long do you work in the company?**

- less than 1 year
- 1-5 years
- 6-10 years
- more than 10 years

**How important are information technologies in your company? \***

- Unimportant
- Slightly important
- Important
- Very important
- Critical

14% completed

# Questionnaire – Impact of IT Outsourcing on Business-IT Alignment

## Part 2. Business-IT alignment

Business-IT alignment is measured within eight criteria:

- Communications
- Value measurement
- Governance
- Partnership
- Technology
- Skills
- Employee engagement
- Technology scope.

In the present questionnaire each criterion is located on the separate sheet. Short description of each criteria is given on the top of the page.

Please, answer each questions twice: first for the current situation, and below determine the desired level in two years.

**According to (Maes, 2000) business-IT alignment is the continuous process, involving management and design sub-processes, of consciously and coherently interrelating all components of the business – IT relationship in order to contribute to the organisation's performance over time.**

Do you agree that this definition fully covers the concept of business-IT alignment. If not, what would you add?

Yes

No

Other:

**Determine the current level of business-IT alignment in your organization (in your opinion))**

Level 1: Initial or ad-hoc processes (low communication, formal relationships, minimal trust and partnership)

Level 2: Committed processes (IT and business started process towards strategic alignment)

Level 3: Established, focused processes (understanding between IT and business is emerging)

Level 4: Improved, managed processes (mutual understanding and knowledge sharing, shared risks and rewards)

Level 5: Optimized processes (integration of strategic business planning and IT planning, extending performance metrics to external partners)

« Back

Continue »

21% completed

# Questionnaire – Impact of IT Outsourcing on Business-IT Alignment

**\*Required**

First six criteria consists of 5-6 attributes. For each attribute there are five possible levels of maturity from lowest to highest.

There are specific scale of answers for each attribute, but generally the scale is the same for all attributes:

- 1 - means that this does not fit the organization,
- 2 - stands for low level fit for the organization,
- 3 - denotes to the moderate fit for the organization,
- 4 - determines that this fits most of the organization,
- 5 - describes strong level of fit throughout the organization.

## 1. Communication

The ability to use a common and clear language between Business and IT organizations.

**To what extent does business understands IT (e.g. IT capabilities, functions, systems, services): \***

UNDERSTANDING OF IT BY BUSINESS

	1. Business management not aware	2. Limited business awareness	3. Emerging business awareness	4. Business aware of potential	5. Pervasive	No response
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired (in two years)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**To what extent does IT understands business (e.g. products, services, customers, strategic goals): \***

UNDERSTANDING OF BUSINESS BY IT

	1. IT management not aware	2. Limited IT awareness	3. Senior and mid-management	4. Pushed down through organization	5. Pervasive	No response
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**What is the level of organizational learning / education (capability to learn and educate from opportunities like previous experiences, problems, and challenges): \***

INTER/INTRA-ORGANIZATIONAL LEARNING

- 1. Casual,
- 2. Informal
- 3. Regular,
- 4. Unified,
- 5. Strong
- No

	ad-hoc		clear	bonded	and structured	response
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Determine the way how business and IT communicate with each other: \***

PROTOCOL RIGIDITY

	1. Command and control	2. Limited relaxed	3. Emerging relaxed	4. Relaxed, informal	5. Informal	No response
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Determine the extent at which knowledge is shared between IT and business (e.g., understand and participate in the each others' key processes): \***

KNOWLEDGE SHARING

	1. Ad-hoc	2. Semi structured	3. Structured around key processes	4. Institutionalized	5. Extra-enterprise	No response
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Determine the extent of cooperation between business and IT: \***

LIAISON(S) BREADTH / EFFECTIVENESS

	1. None or ad-hoc	2. Limited tactical technology based	3. Formalized, regular meetings	4. Bonded, effective at all internal levels	5. Extra-enterprise	No response
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

« Back

Continue »

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**To what extent do you use Service Level Agreements within the company? \***

SERVICE LEVEL AGREEMENTS

	1. Sporadically present	2. Technical at the functional level	3. Emerging across the enterprise	4. Enterprise wide	5. Extended to external partners	No response
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Determine the level of using benchmarks (benchmarking is the method of identifying, adapting, and implementing the practices that produce the best performance results): \***

BENCHMARKING

	1. Not generally practiced	2. Informal	3. Focussed on specific processes	4. Routinely performed	5. Routinely performed with partners	No response
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Determine the level of using assessments and reviews: \***

FORMAL ASSESSMENTS/REVIEWS

	1. None	2. Some; Typically for problems	3. Emerging formality	4. Formally performed	5. Routinely performed	No response
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Determine the level of using continuous improvement practices (e.g. customer orientation, quality circles, reengineering, cross-functional teams): \***

CONTINUOUS IMPROVEMENT

	1. None	2. Minimum	3. Emerging	4. Frequently	5. Routinely performed	No response
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

« Back

Continue »

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# Questionnaire – Impact of IT Outsourcing on Business-IT Alignment

\*Required

## 3. Governance

The degree to which IT related decisions, such as setting IT priorities and allocating IT resources, are made in cooperation of IT and business managers.

Recall:

- 1 - means that this does not fit the organization,
- 2 - stands for low level fit for the organization,
- 3 - denotes to the moderate fit for the organization,
- 4 - determines that this fits most of the organization,
- 5 - describes strong level of fit throughout the organization.

**To what extent does IT participate in the strategic planning of business: \***

BUSINESS STRATEGIC PLANNING

	1. Ad-hoc	2. Basic planning at the functional level	3. Some inter-organizational planning	4. Managed across the enterprise	5. Integrated across and outside the enterprise	No response
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**To what extent does business participate in the strategic planning of IT: \***

IT STRATEGIC PLANNING

	1. Ad-hoc	2. Functional tactical planning	3. Focussed planning, some inter-organizational	4. Managed across the enterprise	5. Integrated across and outside the enterprise	No response
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Determine the organizational structure of IT function and to whom CIO reports: \***

REPORTING/ORGANIZATION STRUCTURE

	1. Centralized; CIO reports to CFO	2. Central/Decentral; Some co-location; CIO reports to CFO	3. Central/Decentral; Some federation; CIO reports to COO	4. Federated; CIO reports to COO or CEO	5. Federated; CIO reports to CEO	re
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	





« Back

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**To what extent there are formal processes in place that focus on enhancing the partnership relations between business and IT: \***

IT PROGRAM MANAGEMENT

	1. Ad-hoc	2. Standards defined	3. Standards adhered	4. Standards evolved	5. Continuous improvement	No response
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Determine the level of trust between business and IT: \***

RELATIONSHIP/TRUST STYLE

	1. Conflict/Minimum	2. Primarily transactional	3. Emerging valued service provider	4. Valued service provider	5. Valued partnership	No response
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Determine the level of sponsors and champions within the company: \***

BUSINESS SPONSOR/CHAMPION

	1. Valued partnership	2. Limited at the functional organization	3. At the functional unit	4. At the corporate level	5. At the CEO level	No response
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

« Back   Continue »

50% completed



**Determine the scope of architectural integration at the enterprise level: \***

ARCHITECTURAL INTEGRATION: Enterprise

	1. No formal integration	2. Early attempts at integration	3. Standard enterprise architecture	4. Integrated with partners	5. Evolved with partners	No response
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Determine the scope of architectural integration at the inter-enterprise level: \***

ARCHITECTURAL INTEGRATION: Inter-Enterprise

	1. No formal integration	2. Early concept testing	3. Emerging with key partners	4. Integrated with key partners	5. Evolved with all partners	No response
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Determine the level of the flexibility of the chosen architecture: \***

ARCHITECTURAL TRANSPARENCY, FLEXIBILITY

	1. None	2. Limited	3. Focussed on communications	4. Effective emerging technology management	5. Across the infrastructure	No response
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

« Back

Continue »

57% completed



**To what extent is you company ready to change: \***

CHANGE READINESS

	1. Resistant to change	2. Dependent on functional organization	3. Recognized need for change	4. Focused	5. High	No response
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**How often do business and IT people move to the other side? \***

CAREER CROSSOVER

	1. Resistant to change	2. Dependent on functional organization	3. Recognized need for change	4. Focused	5. High	No response
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**To what extent does an employee have an opportunity to learn about the services outside his functions using programs such as cross training and job rotation: \***

EDUCATION, CROSS-TRAINING

	1. None	2. Minimum	3. Dependent on functional organization	4. At the functional organization	5. Across the organization	No response
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Determine the level of personal interaction and trust between IT and business units: \***

SOCIAL, POLITICAL, TRUSTING ENVIRONMENT

	1. Minimum	2. Primarily transactional	3. Emerging valued service provider	4. Valued service provider	5. Valued partnership	No response
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>





# Questionnaire – Impact of IT Outsourcing on Business-IT Alignment

\*Required

## 7. Employee engagement

The overall success of a company is feasible only when all levels from owners to regular employees are aware about company’s strategic plans and their possible contributions to the goals described in those plans.

The employee engagement alignment is measured within four factors:

- 1) perceived organizational trust,
- 2) perceived communications on IT-Business strategies to employees,
- 3) employee commitment to business–IT strategies,
- 4) perceived knowledge on IT-Business.

Each factor consists of set of statements. For each of these statements you are asked to use a 1 to 5 rating scale to indicate how strongly you agree or disagree with this statement:

1. Strongly disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree

### Perceived Organizational Trust

**We believe in the strategies laid out by our senior management. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**It is not a problem for us to provide ideas on feedbacks on companies’ strategies. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**When employees express their point of view and ideas, they will be truly heard. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Desired

**We are encouraged to share our ideas and feelings with others. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**We trust each other to complete a job. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Conflicts in our views in company strategic directions will be dealt with in an appropriate and professionalism. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**IT strategies are an important part of business strategies. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## **Perceived communications on business-IT strategies to employees**

**I am kept informed about major changes occurring within the company. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**I am kept informed about reasons behind company decisions. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**The information I receive from the company is complete. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Information is shared in a timely manner from the company. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**I have the information needed to perform my job effectively. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**My business/function does a good job of communicating information to all employees. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

« Back

Continue »

71% completed



# Questionnaire – Impact of IT Outsourcing on Business-IT Alignment

\*Required

## Perceived employee commitment to business-IT strategies

I am willing to put in a great deal of effort beyond that which is normally expected in order to help the business be successful. \*

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I am committed to the long term strategies set by my organization. \*

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I feel loyal to the business. \*

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I find my values and goals are compatible with the business values and goals. \*

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I am proud to tell others that I am part of the business. \*

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**I agree with the business' goals, plans and policies. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**I really do care about the fate of the business. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Deciding to be involved with the business has had a positive influence on my life. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**I understand and support decisions regarding the future of the business. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Perceived knowledge of business-IT strategies

**People in our organization frequently spend time discussing customers future needs, visions and companies' strategies. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Desired

**When people in our organization need information, they know whom exactly to ask. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**There are regular meetings between departments to discuss trends and developments. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**We keep a database of customer information, business and IT strategies that is easy to access. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Information about customer satisfaction is disseminated to all levels of our organization. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**We encourage people with similar interest to work together. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**We manage to keep up-to-date with technological developments that could affect our business. \***

Strongly

Strongly



	disagree	Disagree	Neutral	Agree	agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Information on new technological developments that affect our business is circulated. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**We periodically review the likely effect of changes in technology on our customers. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**We are quick to decide on how to respond to changes in technology. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

« Back   Continue »

78% completed

# Questionnaire – Impact of IT Outsourcing on Business-IT Alignment

\*Required

## 8. Technology scope

Technology scope measures how IT projects impact the achievement of specific business goals. Technology scope is understood in terms of four types of information systems:

- 1) operational support systems,
- 2) market information systems,
- 3) strategic decision support systems,
- 4) inter-organizational information systems.

Higher alignment between information systems and company’s business strategy suggests that corporate information systems are targeted on business directions vital to company’s success.

Each type of IS is assessed via set of statements. For each of these statements you are asked to use a 1 to 5 rating scale to indicate how strongly you agree or disagree with this statement:

1. Strongly disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree

### Operational Support Systems

**Our IS improve the efficiency of our day-to-day business operations. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Our IS support effective coordination across functions (e.g., marketing, manufacturing) and product lines. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Our IS provide us with the facts and figures we need to support our day-to-day decision making. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Our IS enable us to develop detailed analyses of our present business situation. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Our IS provide sufficiently detailed information to support prudent decision making. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Our IS support detailed analyses of major business decisions. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Market Information Systems

**Our IS assist us in setting our prices relative to the competition. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Our IS help us introduce new products and/or services in our markets. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Desired



**Our IS help us monitor changes in our market share. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Our IS permit us to rapidly adjust our prices. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Inter-organizational Systems

**Our IS enable us to develop stronger links with suppliers. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Our IS enhance our ability to negotiate with our suppliers. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Our IS enhance our ability to negotiate with our customers. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Our IS enable us to develop stronger links with customers. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Strategic Decision Support Systems

**Our IS facilitate strategic business planning. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Our IS help us model possible future outcomes of alternative courses of action. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Our IS are used to forecast key indicators of business performance. \***

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Current	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Desired	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

« Back

Continue »

85% completed

# Questionnaire – Impact of IT Outsourcing on Business-IT Alignment

\*Required

## Part 3. IT outsourcing

First four questions determine the degree of outsourcing, what services are outsourced and reasons behind outsourcing decision.

Further the maturity of IT outsourcing is measured within 7 criteria derived from literature:

1. Contract management
2. Performance management
3. Preparation step
4. Outsourcing strategy
5. Governance
6. Knowledge management
7. Relationship management.

For each of these questions, you are asked to use a 1 to 5 rating scale to indicate how strongly you agree or disagree with this statement:

1. Strongly disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly agree

### Determine degree of IT outsourcing activities based on 5-point scale \*

How much of internal IT services are outsourced

- Not significant ( < 5%)
- Limited (5-20%)
- Partial (20-50%)
- Significant (50-75%)
- (Almost) Total ( >75%)

### What IT services / resources are outsourced in your company? \*

- Application development
- Application maintenance and support
- Hosting
- Infrastructure maintenance
- Helpdesk
- Desktop support
- End user devices management
- Security
- IT management
- IT consulting
- Other:

### What IT services / resources are outsourced in the cloud in your company?

- Data storage
- Back up solutions
- Document collaboration services
- E-mail, communication
- Database processing
- Virtual machines
- Web servers
- Network
- Custom apps
- Other:

### Reasons of IT outsourcing (can be several) \*

- Cost reduction
- Focus on core competencies
- Access to expertise and knowledge
- Other:

### Outsourcing strategy\_1 \*

Our outsourcing strategy is aligned with business objectives.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

### Outsourcing strategy\_2 \*

Our outsourcing strategy includes the goals of outsourcing and expected outcomes.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

### Preparation step\_1 \*

According to the literature research, the company selects vendor based on the number of factors. Please, indicate which ones were important for you, or add your option.

- Proven track records
- Recommendations and references
- Matching business aims
- Financial stability and good credentials
- Cultural compatibility
- Providing post development support

Available infrastructure and technology

Expertise and knowledge

Other:

**Preparation step\_2 \***

We carefully explored the market before selection of the right provider.

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

**Contract management \***

Our contract with service provider is thought out in details, describes procedures in the case of disputes and actions in the case of contract violations.

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

**Governance\_1 \***

Being involved in IT outsourcing relationships, we continuously monitor, control and if necessary adjust our requirements and actions.

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

**Governance\_2 \***

Top management formulates strategic directions and reviews results regularly.

Strongly disagree

Disagree

Neutral

Agree

Strongly agree

**Relationship management\_1 \***

We establish trustful and cooperative relationship with our outsourcing provider.

Strongly disagree

Disagree

Neutral

Agree

Strongly agree



**Relationship management\_2 \***

We promote personal relations and social bonds with our vendor.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

**Performance management\_1 \***

We use set of quantifiable metrics to constantly measure the delivered value ensure synchronization with long-term outsourcing objectives.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

**Performance management\_2 \***

What metrics do you use for performance measurement?

- Financial (total cost of ownership, cost per transaction or per employee, IT spend as a percentage of enterprise operating expense, etc.)
- Service quality (accuracy, reliability, availability, delivery speed, response rate, continuous updates)
- Creative solutions
- Relationship (communication, problem solving, conflict resolution, positive interaction, flexibility)
- Strategy (alignment of goals and vision by both parties, meeting outsourcing objectives, benefits and competitive advantage)
- Growth (training and improvement programs, increase in employee efficiency)
- Other:

**Performance management\_3 \***

We use service level agreement (SLA) as a practical day to day tool to measure performance.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

**Knowledge management\_1 \***

We have ongoing exchange of expertise and knowledge with our outsourcing provider.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

**Knowledge management\_2 (Be attentive! Negation question) \***

We unwillingly share and transfer knowledge as far as it is part of company's assets.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

**If you think that other factors might be included in measuring IT outsourcing maturity, please indicate them below.**

92% completed

# Questionnaire – Impact of IT Outsourcing on Business-IT Alignment

## Conclusions

Thank you for answering all questions! Your help is very much appreciated.

Do not forget submit your answers on the bottom of this page.

### Remarks (optional)

This is an optional field. If you have something to add, please write it here.

**If you want to receive summary of the findings, please write your e-mail.**

« Back

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## Appendix N. Mathematical rationale for statistical analysis

This section analyses data with the goal of finding the correlation between BIA and ITO scores. Table 1 summarizes the overall measurement results of the seven companies (recall: questionnaires from four case study companies and three surveys).

Table 1. BIA and ITO maturity levels

Score \ Company	Comp A	Comp B	Comp C	Comp D	Survey 1	Survey 2	Survey 3
ITO maturity score	2,58	3,92	2,36	3,25	3,16	1,90	3,06
BIA maturity score	2,83	3,79	2,46	2,33	3,06	2,25	2,87

It has become clear that the gathered data is not enough to distinguish cloud computing outsourcing and outsourcing of other IT services. For example, besides outsourcing services in the cloud companies A and B outsource infrastructure maintenance. While alignment maturity is assessed across the organization between business and IT teams, with no specific distinction for cloud providers. Combination of different outsourcing services allows study the impact of ITO on business-IT alignment level in general without scoping to cloud computing services. To overcome this difficulty, it is necessary to scope the future research to companies with only cloud computing outsourcing.

The results of the seven questionnaires are plotted in the graph in Figure 1. On the graph blue dots represent data from the case study and red dots outline data from survey. Visualization of data allows making fast, accurate judgements and patterns recognition.

Visual examination of the scatter plot shows the positive correlation between two variables. The graph suggests that higher ITO level correlates with higher BIA score. Numerical justification follows below.

It could be seen that *Company D* does not belong to the trend. The reason was explained in Section 6.3.4. The level of IT outsourcing is high in this company because it uses only document collaboration services which are easy to manage. This kind of service does not require extensive outsourcing strategy, the contract is very typical and performance indicators are obvious. The other three case studies were consistent with the information received during their respective interviews. The survey points (red) were plotted based on solely on questionnaire results.

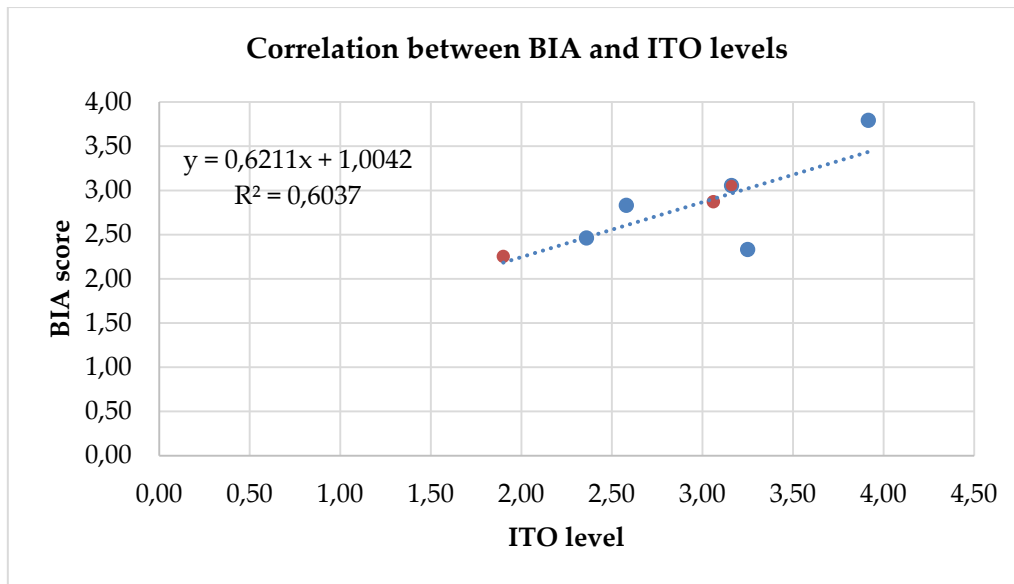


Figure 1. Correlation between BIA and ITO levels

Linear regression is a way of estimating the relationships between two variables. The functionality of Excel was used to build regression line and find the most appropriate values for variables in the linear regression equation. The equation is shown in Figure 1. The value of slope is 0.6211. It means the following: if ITO maturity level increases by one point then the model predicts that BIA maturity score will increase approximately 0.62 points. In terms of business-IT alignment improvement by 0.62 points could be considered as a significant leap. On the other hand, it is challenging task to improve ITO score by one point. For achieving this improvement company should work upon all factors, namely elaborate more thought-out outsourcing strategy and align it with business goals, build beneficial relationships with provider, establish performance management policy, etc.

The most common method for fitting a regression line is the method of least-squares ( $R^2$ , pronounced R squared).  $R^2$  is a statistical measure of how close the data are to the fitted regression line. Sometimes it is referred as goodness-of-fit statistics. A value of  $R^2$  equal to one would imply that the model provides perfect predictions, but it rarely happens in reality. The calculated  $R^2$  value for the regression model in Figure 1 equals 0.6037. It means that fit explains 60% of the total variation in the data about the average. The more variance that is accounted for by the regression model the closer the data points will fall to the fitted regression line.

However, the sample set is too limited to generalize behaviour of the regression and provide statistical generalization. It is probable that the coefficients in the equation and  $R^2$  value will change on addition more subjects to the data set.

Correlation coefficient is another technique that can provide interesting insights in the results. Correlation coefficients are used to measure strength and the direction of a relationship between two variables. Pearson's correlation coefficient is a measure of this linear relationship. Pearson's correlation coefficient is denoted with  $r$  letter. The  $r$  value can

be between +1 and -1 inclusive, where 1 is total positive correlation, 0 is no correlation, and -1 is total negative correlation.

First step is to decide whether to use one-tailed or two-tailed test. One-tailed test is used when an a priori hypothesis about the sign of the correlation (positive or negative) exist. While two-tailed test is applied when no beforehand hypothesis is formulated. As the goal of the present research is to determine the direction of relationship hence two-tailed test is used.

Functionality of Microsoft Excel was used to compute value of Pearson’s coefficient and confidence intervals. The results are presented in Table 2, where

$n$  – number of subjects,

$df$ – degree of freedom.

Level of significance 0.1 says that 10% of samples might show a relationship when there was no relationship in reality (10 times out of 100). Another way of looking is that at least 90 times out of a 100 the found relationship within the sample also exists in the reality. Along the same line, level of significance 0.05 means 95% of confidence, etc. In the Table 2 level of significance is shown for different  $\alpha$ .

For population of seven subjects level of significance of 0.05 equals 0.754. This value is the minimum correlation coefficient needed in order to confidently state that 95 times out of a 100 the relationship found with 7 subjects exists in the population from which they were drawn.

Table 2. Pearson’s correlation coefficient

			Level of significance for two-tailed test ( $\alpha$ )				Confidence level			
r	n	df = n - 2	0,1	0,05	0,02	0,01	90%	95%	98%	99%
0,7716	7	5	0,669	0,754	0,833	0,874	valid	valid		

Pearson’s correlation coefficient is equal 0.7716. The Pearson’s coefficient is above 0.754 ( $\alpha = 0.05$ ) but below 0.833 ( $\alpha = 0.02$ ). It means that it could be reported that the relationship exist with 95% confidence but not strong enough for 98% confidence.

The correlation of 0.7716 between ITO level and BIA score tells that:

- The relationship is positive. If ITO score increases then BIA score increases as well.
- The correlation is high enough for achieving at least a 95% of confidence.

Pearson's coefficient is used to test the null hypothesis. Null hypothesis states that IT outsourcing level has no effect on the alignment level. The aim is to reject the null hypothesis and accept the alternative hypothesis that an effect exists. Hypothesis testing is conducted in the series of steps.

1. Specify null hypothesis and alternative hypothesis

$H_0$ : no relationship exists between IT outsourcing level and alignment level.

$H_A$ : relationship exists between IT outsourcing level and alignment level.

2. Choose a significance level

Assume  $\alpha = 0.05$  is chosen.

3. Find critical values of Pearson's correlation coefficient

$n = 7, df = 5, \alpha = 0.05$

$r_{crit} = 0.754$

4. Compute the sample value of Pearson's correlation coefficient

Pearson's correlation coefficient ( $r$ ) is equal 0.7716.

5. Compare observed test statistic to critical test statistic and make a decision about  $H_0$

If the absolute value of the calculated Pearson's coefficient is above the critical value  $\alpha = 0.754$  then it is possible to reject the null hypothesis (there is no relationship) and accept the alternative hypothesis.

Consequently the null hypothesis (there is no relationship) can be rejected and alternative hypothesis accepted. Alternative hypothesis states that there is a relationship between ITO level and level of internal business-IT alignment.

Linear regression equation revealed positive slope of the regression line which matches with the calculated Pearson's coefficient ( $r > 0$ ). In such a manner it is *not* claimed that the linear equation will explain all further possibly collected data but it could be stated that the correlation is definitely positive.

Case study research is especially vulnerable to criticism regarding limited generalizability, given the small sample set (Mookherji, S., & LaFond, A., 2013). However, the goal of the present research is not statistical generalization, but analytic generalization. In analytic generalization case study results lead to the formulation of hypothesis that can be tested with the greater sample set. Taking into account the limited number of cases, the calculated business-IT alignment and IT outsourcing maturity levels form the basis to formulating hypothesis about effect of ITO on BIA. The hypothesis is stated as follows:

IT outsourcing has a positive impact on the level of business-IT alignment.

It was noted in the beginning of this section that these findings are not specific to the cloud computing outsourcing. However, cloud computing can be seen as a type of IT outsourcing, hence the found results could be an indication that cloud computing has a positive effect on the internal alignment level as well.