IT IS ALL ABOUT THE GAME – AN EXPLORATORY STUDY ON THE IMPACT OF TASK CHARACTERISTICS ON THE DIMENSIONS OF BUSINESS/IT SHARED UNDERSTANDING

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IT IS ALL ABOUT THE GAME – AN EXPLORATORY STUDY ON THE IMPACT OF TASK CHARACTERISTICS ON THE DIMENSIONS OF BUSINESS/IT SHARED UNDERSTANDING

Research

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Abstract

While research and practitioners agree that there needs to be shared understanding (SU) between business and IT in any type of collaboration to achieve high performance, empirical studies examining SU have always focused on specific contexts. Thus, the literature has so far remained silent about a more generalized concept of SU that can be applied to different research contexts – like strategic planning, software development projects, or IT operations. Based on a generic multi-dimensional conceptualization of the SU construct, our research objective is to analyze the influence of two contextual characteristics – complexity and relevance – of a collaborative task between business and IT on the importance of these different SU dimensions. In this explorative research we exploit data from 21 case studies, in which we analyze the formation and influence of SU dimensions related to the context of the collaborative task. We find that different aspects in the conceptualization of shared understanding become more (or less) important when changing the task characteristics. Thus, our findings indicate that the importance of SU cannot be discussed separately from the practical context in which SU is created and utilized.

Keywords: Shared understanding, exploratory case studies, business/IT collaboration, context factors.
1 Introduction

Different team sports imply different rules and characteristics that are attached to the specific game. A ball, 2-12 persons and a net are necessary to play volleyball. A bigger ball, 2-22 players and two marked goals are needed to play soccer. In addition the teams need to understand the rules of the game. In a high performing team – like FC Bayern München – every team member is additionally very familiar with the different tactics and can understand and interpret the behavior of each of their team members. All team members share an understanding of the objectives of the game and how to jointly score a goal. Now, if we change the game from soccer to basketball or volleyball, the objectives and the process to win the game are very different, even though all three sports are team sports using a ball.

By applying this metaphor to the business context – or, more precisely, to the development of shared understanding between business and IT professionals – we can see that business and IT units interact in very different ‘games’ like software development projects, data center management or ERP integration. Every ‘sport’ is represented by a different research stream. The literature on strategic alignment (e.g. Wu et al., 2015), information system development (e.g. Charaf et al. 2013), virtual team coordination (e.g. Thomas and Bostrom 2007), and several other research streams commonly acknowledge shared understanding to be a crucial variable driving the success of any collaboration (or game) among business and IT. While there is no question about the importance of the concept, there are still quite dispersed discussions about the definition and conceptualization of this variable (Bittner and Leimeister 2014). For example, research in strategic alignment describes the factor as “mutual understanding of the role of IT [in the organization] between the CEO and CIO” (Johnson and Lederer 2010). On the other hand, research on team coordination widely includes more social aspects like mutual beliefs (Cornelius and Boos 2003) or “understand[ing] each other - their preferences, strengths, weaknesses, and tendencies” (Cannon-Bowers and Salas 2001, p. 197).

From empirical studies on shared understanding between business and IT professionals we can see that – related to the respective research stream – the study findings on shared understanding are most usually limited to the specific context of the empirical study. Several researchers acknowledge this limitation of missing generalization (Nelson and Cooprider 1996; Tiwana 2012). Thus, some researchers limit their findings “to only one type of collaboration process” (Bittner and Leimeister 2014, p. 131) or expect different findings in other industries (Preston and Karahanna 2009b; Wagner et al. 2014).

Our explorative study attempts to consolidate these different conceptualizations of shared understanding into one comprehensive framework. Based on this framework, we analyze the context-driven differences in the formation of the shared understanding dimensions – like shared understanding of the objectives or work environment – impacting teams’ performance. Our assumption is that we can find shifting characteristics of the dimensions of shared understanding when we focus on different types of business/IT collaboration. In our study, we conceptualize these different collaboration types by the underlying task of the partnership, which will be described by the degree of complexity and whether the task is of strategic or operational relevance. Our research question is:

*How do task characteristics determine the importance of the different dimensions of shared understanding between business and IT professionals?*

To answer this research question, we conducted interviews with 21 business managers or IT managers, who are – in different ways (i.e., contexts) – involved in business/IT collaboration. The paper starts with a brief description of what we understand by the term ‘shared understanding’ and a brief classification of task characteristics. We then introduce our explorative research approach and data collection process. Afterwards, we present our findings and derive a generic framework of shared understanding with regards to the task characteristics. Finally, we discuss implications and potentials for future research.
2 Theoretical Background

In this section, we discuss previous research on shared understanding and provide a classification of task characteristics.

2.1 Research on shared understanding

2.1.1 Meaning and definition of shared understanding

Shared understanding is defined as “the ability of IT and business […] at a deep level, to understand and be able to participate in the other’s key processes” (Reich and Benbasat, 2000, p. 86) to enable knowledge transfer and to make the IT staff able to provide effective services to the business. In our review of the existing literature on shared understanding between business and IT professionals we found different types of definitions and conceptualizations. While for example Karahanna and Preston (2013) analyze the agreement between business and IT professionals on the role of IT, Marshall and Brady (2001) state that sharing an understanding does not automatically imply shared agreement but a “satisfactory interpretation of their respective positions” (p. 99). Other – very detailed – research about the concept of shared understanding attempts to capture all facets of the concept of shared understanding and describe the different aspects of the term “shared” and the generic aspects that needs to be shared (Cannon-Bowers and Salas, 2001). Based on this research we define shared understanding as having the same information in a specific context but that these information are subjectively interpreted.

2.1.2 Conceptualizations of shared understanding

In an earlier paper, we conducted a literature review on shared understanding in business/IT collaboration and found that the various conceptualizations of shared understanding depend on the respective research contexts (such as strategic alignment or IS development) (Jentsch and Beimborn, 2014). The findings related to the previous conceptualizations of shared understanding are presented in Table 1 which highlights the most commonly mentioned perspectives in previous literature.

<table>
<thead>
<tr>
<th>Perspective of Shared Understanding</th>
<th>Explanation of perspective</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Role of IT</td>
<td>“common views […] about IS utilization […] for the successful creation of IS strategy.” (Johnson and Lederer, 2010, p. 139)</td>
<td>(Jeffers et al., 2008; Johnson and Lederer, 2010; Preston and Karahanna, 2009)</td>
</tr>
<tr>
<td>Future Role of IT</td>
<td>Long-term perspective/Vision of the utilization of IT Systems to support business strategy</td>
<td>(Johnson and Lederer, 2007; Lahdelma, 2010; Reich and Benbasat, 2000)</td>
</tr>
<tr>
<td>Objectives</td>
<td>Do the partners understand the goals they are jointly heading to in a similar way?</td>
<td>(Reich and Benbasat, 2000; Yang et al., 2012)</td>
</tr>
<tr>
<td>Business/IT Knowledge</td>
<td>“knowledge that the IT manager possesses about the [business] process [and] the knowledge that the [business] manager possesses about the potential opportunities to apply IT to improve [business processes]” (Ray et al., 2005, p. 630)</td>
<td>(Ajjan, 2009; Beimborn, 2012; Ray et al., 2005)</td>
</tr>
<tr>
<td>Work environment</td>
<td>Understanding among IS and business managers for technologies and processes, i.e. problems, tasks, roles, etc.</td>
<td>(Cohen and Toleman, 2006; Nelson and Cooprider, 1996; Schlosser et al., 2015)</td>
</tr>
<tr>
<td>Language</td>
<td>Meaning of words, symbols and concepts</td>
<td>(Charaf et al., 2013; van den Hooft and de Winter, 2011)</td>
</tr>
</tbody>
</table>

Table 1. Perspectives of Business/IT Shared Understanding
It is important to mention that not all perspectives might be discriminant. For example, understanding the business processes could be interpreted as being a part of understanding the work environment. Nevertheless, to ensure to consider the holistic framework of shared understanding, we applied all this perspectives in the further steps of our research approach.

2.1.3 Increased performance as positive outcome of shared understanding

Focusing on the outcomes of a high level of shared understanding we found slightly different discussions, bound to the respective research question. While research in the field of strategic alignment brings the (social) alignment between business and IT units into focus (Tan and Gallupe, 2006), studies that analyze shared understanding in software development describe the desired outcome as knowledge integration (Tiwana et al., 2003), or generally as project success (Fisk et al., 2010), or performance (Cohen and Toleman, 2006). We will subsume these different outcome labels with the generic concept of performance. In the definition of performance, we refer to Leidner et al. (2010) who conceptualize IS performance as “IS contribution to strategic growth” and “IS contribution to firm efficiency”.

2.2 Task characteristics

In the discussions about how to describe the task between business and IT professionals the contingency perspective showed to be very useful. It “suggests that neither structural features nor firm choices directly impact performance; rather, contextual or structural features moderate the efficacy of choices or work practices.” (Lee et al., 2004, p. 112). In our search for relevant contingency factors we focused particularly on research fields in which shared understanding represents a critical success factor, e.g. in outsourcing management (e.g. Dibbern et al., 2004), project management (e.g. Frey and Buxmann, 2012), team control and coordination (e.g. Chua et al., 2012), and strategic alignment (e.g. Chan and Reich, 2007). While in some cases the authors precisely pointed out the contingency factors (e.g. Frey and Buxmann, 2012), other studies raised contingency factors more indirectly by, e.g., describing the context of their case study or of the research findings. For our study setting, we identified two contingency factors as being crucially important to describe the effects of shared understanding on performance – the complexity and the relevance of the task to be accomplished.

2.2.1 Task Complexity

Campbell (1988) stated that “task complexity can be related directly to the task attributes that increase information load, diversity, or rate of change.” (p. 43). He argues that task complexity can be defined objectively; a complex task might either be executed by multiple paths, can generate multiple outcomes, that there exist conflicting interdependencies among paths to multiple outcomes or uncertain linkages between path and outcome. Thus, we understand complexity as uncertainty of

- the task execution,
- the targeted outcome, and
- the linkage between path and outcome.

In recent research, complexity can be found as a contingency factor to support the necessity of the respective study. For example, Bittner and Leimeister (2014) analyze “shared understanding of the tasks in complex work processes”, Ko et al. (2005, p. 111) focus on knowledge transfer in “Enterprise resource planning (ERP) systems and other complex information systems” (p. 59), and Zelt et al. (2014) argue that their research object of “application service outsourcing (ASO) is more complex than the outsourcing of other information technology (IT) functions” (p. 1) (accentuations added by the authors). Further studies assume that there is a difference between complex and non-complex systems. For example Blomquist and Müller (2006) argue that “governance structures seems to differ by the
degree of complexity” (p. 53). Since we define the task between business and IT as the management of IT systems to support business processes we differ the level of complexity by highly standardized management routines on the one side and fully individual and interdependent approaches in the management of the IT system on the other side.

2.2.2 Relevance of the Task

“The contingency-based perspective asserts that IT resources […] play a major role in improving a firm’s performance only when they are planned and used to support a firm’s main strategic objectives” (Oh and Pinsiconeault, 2007, p. 240). The task between business and IT can be both – of high strategic relevance to improve the strategic growth of the firm or of low strategic (i.e. operational) relevance to support or improve the firm’s efficiency. This assumption is supported by the Resource Dependency Theory in combination with the Resource Based View. The Resource Dependency Theory argues that all organizations find themselves dependent on some elements in their external environments (Cheon et al., 1995). Even though a firm needs to have these resources to do business, the resources will not generate a strategic advantage per se. To analyze if a resource provides a strategic advantage we use the Resource Based View (Mata et al., 1995). Originally this approach has been developed to decide if a resource is worth investing in or not to achieve a sustainable strategic advantage (e.g. Cheon et al., 1995). In our research, in which we analyze existing collaboration, we apply this concept to analyze whether a resource (which is developed or maintained in the collaboration) is of strategic relevance or if the resource is ‘just’ necessary to support and facilitate the operational business. Hence, operational resources do not generate a strategic advantage for the firm, but are necessary to keep the business running. Related to the conceptualization of IT performance (cf. Leidner et al., 2010) we can derive that strategically relevant resources mainly impact performance in terms of ‘strategic growth’ while commodities which are of operational relevance rather facilitate ‘IS contribution to firm efficiency’. Thus, we apply resource relevance as a contingency factor, which categorizes such resources that connect business and IT units from to be either a low valuable but necessary resource or a highly valuable resource exhibiting high potential for a sustainable competitive advantage.

3 Research Approach

The objective of this explorative case-based study is to find out more about the relevance of the dimensions of shared understanding in different case settings.

We collected data from 21 different cases in companies located in Germany by interviewing managers and team members from different industries. The case study respondents were selected due to their current positions and responsibilities in the organization. Our objective was to cover a wide range of different responsibilities and project experiences. On the other hand, the respondents needed to be involved in tasks that are fulfilled jointly by IT and business professionals. We tried to get as much input as possible – both in terms of amount and variation. Therefore, we tried to get a balance of business and IT representatives to make sure that we have both IT and non-IT perspectives well represented in our sample. Moreover, we followed a theoretical case sampling approach, ensuring that we have enough cases for each combination of high/low-complexity tasks and strategic/operational relevance. To do so, we searched for and found cases from different kinds of IT contexts, ranging from infrastructure management in a large multi-national enterprise to innovative software development in a medium-size firm.

Table 2 highlights the characteristics of the single respondents and the case settings.
<table>
<thead>
<tr>
<th>ID</th>
<th>Industry</th>
<th>Respondent</th>
<th>IT task the respondent is involved in</th>
<th>Complexity</th>
<th>Relevance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Strategic</td>
</tr>
<tr>
<td>A</td>
<td>Banking</td>
<td>Business</td>
<td>IT architecture; Process automation</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>B</td>
<td>Aerospace</td>
<td>Business</td>
<td>Maintenance of data center services</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>C</td>
<td>Telecommunication</td>
<td>IT</td>
<td>Development of internal software application</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>D</td>
<td>Software engineering</td>
<td>IT</td>
<td>Development of company wide applications</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>E</td>
<td>Railway</td>
<td>IT</td>
<td>ERP application development and integration</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>F</td>
<td>Banking</td>
<td>IT</td>
<td>Commodity management</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>G</td>
<td>Aerospace</td>
<td>Business</td>
<td>Companywide desktop services</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>I</td>
<td>Medical Technology</td>
<td>IT</td>
<td>Scrum development for advanced visualization in hospitals</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>J</td>
<td>Education</td>
<td>IT</td>
<td>Server migration</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>K</td>
<td>Automotive</td>
<td>Business</td>
<td>International rollout of a recruiting system</td>
<td>Med.</td>
<td>Low</td>
</tr>
<tr>
<td>L</td>
<td>Health Care</td>
<td>Business</td>
<td>Application migration</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>M</td>
<td>Medical Technology</td>
<td>Business</td>
<td>Development of a tool for process management</td>
<td>Med. - High</td>
<td>Med.</td>
</tr>
<tr>
<td>O</td>
<td>Medical Technology</td>
<td>IT</td>
<td>Software development for clinical device</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>P</td>
<td>Pharmaceuticals</td>
<td>Business</td>
<td>Development of an application life cycle management tool; implementation of process standards</td>
<td>High</td>
<td>Low – Med.</td>
</tr>
<tr>
<td>Q</td>
<td>Health Care</td>
<td>IT</td>
<td>Enterprise-wide integration of a Team Foundation Server</td>
<td>Low – Med.</td>
<td>Med.</td>
</tr>
<tr>
<td>R</td>
<td>Automotive</td>
<td>Business</td>
<td>Interfacing external online job markets to the internal e-recruiting system</td>
<td>High</td>
<td>Med. - High</td>
</tr>
<tr>
<td>S</td>
<td>Health Care</td>
<td>IT</td>
<td>Implementation of a Product Management Lifecycle application</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>T</td>
<td>Health Care</td>
<td>IT</td>
<td>Management and implementation of change requests for an existing business application</td>
<td>Low - Med.</td>
<td>Low</td>
</tr>
<tr>
<td>U</td>
<td>Software Services</td>
<td>Business</td>
<td>Fundamental enhancements of existing HR software (merchandise)</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>V</td>
<td>Software Services</td>
<td>IT</td>
<td>Development of an online app store</td>
<td>High</td>
<td>High</td>
</tr>
</tbody>
</table>

*Table 2. Characteristics of the cases and case respondents*

In the case interviews, we asked the respondent to refer to just one specific task (i.e. project) between business and IT professionals in which s/he has been involved as a team leader or member. To determine the degree of complexity and strategic relevance, we first asked the respondent to describe the task in detail. Next, the respondent had to compare the level of complexity and strategic relevance of the task with other common organizational tasks s/he is involved in. Last, the respondent has been asked to rate the level of complexity and strategic relevance on a scale of 1 to 5 and provide reasons for the grading. In the reasoning, we especially focused on the criteria of complexity and strategic relevance discussed in section 2.2. If the mentioned reasons did not for example match the criteria for a high level of complexity or strategic relevance we adjusted the grading.
After the description of the task, we focused on the different perspectives of shared understanding (de-
veloped in section 2.1). We asked the respondents for their interpretation and meaning of the respec-
tive perspectives and the importance within this particular task between business and IT. The tech-
nique of thematic coding was used to analyze the transcribed interview data, encompassing the stages
of data reduction, data display, and conclusion drawing. The bins of complexity and relevance were
used as the seed categories in the data reduction phase (Miles and Huberman, 1994). The data was
then coded in MAXQDA by consolidating the data into a hierarchy of nodes which were used amongst
the researchers to prompt discussion as to the classification of the data. The final phase consisted on
drawing the conclusions from the analysis which “noting the regularities, patterns, explanations, pos-
sible configurations, causal flows and propositions” (Miles and Huberman, 1994, p. 11).

The steps of the data analysis process are visualized in Figure 1.

![Figure 1. Data analysis process](image)

Task characteristics (complexity and relevance) rated as „medium“ have been considered in both cate-
gories of high and low complexity/relevance. If, for example, a respondent rated task complexity as
being medium, we deliberated about whether the concrete statements in the case might be a result of
high complexity parts within the task or if task complexity does not play a significant role in the ar-
gumentation of the statement.

4 Findings

As a first step in our analysis, we narrowed the initial six perspectives on shared understanding (Table
1) to three dimensions: shared understanding of objectives, about the work environment and regarding
the meaning of words. In the interviews, in which we applied card sorting techniques for differentiat-
ing and discussing the different dimensions of SU, the respondents pointed at major overlaps between
some of the initial 6 perspectives: the perspectives of the current and future role of IT were commonly
interpreted as the objectives of the IT systems/project and partly subsumed as understanding of the
work environment by the interviewees; being knowledgeable about the business or IT was associated
as understanding the work environment of the business/IT; the focus of the last dimension, which has
been labeled as language in previous literature (Karahanna and Preston, 2013; van den Hooff and de
Winter, 2011) lies more in the understanding for concepts and symbols of the applied terms in the
communication (Charaf et al., 2013) for which reason we relabeled the dimension into meaning of
words.

Figure 2 highlights the research framework that resulted from this consolidation and which guides the
following analysis of the findings\(^1\). The findings for each connection between the task characteristics
and the dimensions of shared understanding are discussed in the following.

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\(^1\) Please note that this is not a theoretical research model or set of propositions (although it might look like this). The frame-
work just visualizes that our exploratory analysis focused on whether and how two contingencies (complexity and relevance)
 affect the role of shared understanding (conceptualized by three dimensions, as derived from the case interviews) for perfor-
mane
4.1 Impact of Task Complexity on the Role of Shared Understanding

4.1.1 Shared Understanding of Objectives and Task Complexity

Starting our analysis with the contingency factor of complexity we found that projects with very low-complexity, like services that can be purchased from several providers (internal or external), are mainly managed by formal price mechanisms (A: “... in the end there is a price tag for which you get a specific level of quality. And if you not get that quality, there will be penalties”). In general, we found that in most low complexity tasks shared understanding of the objectives is simple to achieve and thus, does not represent a success factor that is difficult to manage. Most interviewees in this context raised the importance of shared understanding of the objectives but also agreed, that there have not been any problems about this in their described case settings (e.g. B, G, L).

Only respondent O mentioned difficulties – not in understanding the formal objectives of the project, but more during the communication and prioritization of change requests affecting the formally defined objectives. The task in this case was to develop a software product for a high-end clinical device. The interviewee perceived the development of the software as not being very complex, because the team had developed similar software before. All stakeholders had a clear understanding of the formal features of the software and the team could apply standard development routines. Even though all stakeholders in the involved division would argue to have a clear understanding of the project’s objectives, the interviewee mentioned several problems due to “absurd” change requests from the business side of the division when it came to features that had not been formalized in the product description. Even though the IT manager understood the “nice to have” change request, he perceived most of the requests as being not significantly important for the quality of the final product: “I told my team, to just ignore the absurd ‘nice to have’ requests and after 4 months nobody will ask for that anymore. It was like that most of the time – nobody asked after 4 months again.” (O).

This case highlights that, even though the general objectives are very clear, there might still be smaller change requests and very granular expectations that need to be managed. In this particular case all stakeholders had a clear understanding of the key features of the product but difficulties occurred when it came to details.

While in low-complexity projects the overall objectives seem to be clear to everyone, a shared understanding of objectives in high-complexity projects is much more difficult to achieve. We interviewed managers responsible in large Scrum projects (I), companywide process management in large firms (A, M, P) and innovative developments of interfaces to external platforms (R). All respondents argued that having a shared understanding of what to achieve in the collaboration is the most critical aspect for success. At the same time, all respondents described that in their project IT and business actually did not share the same understanding for objectives at all time due to the complexity of the tasks outcome. J argued that the objectives were too fuzzy at the beginning of the project and that the management did not communicate a deadline for the delivery because it was not quite clear what the precise...
system features will have to be. As a recommendation, respondent I argued that it is very important to communicate the business objectives iteratively as often as possible: "Communication means constant communication until the partner can repeat blindfolded." (I). Because complex projects often do not have a clear formalized outcome plan, stakeholders seem to be aware of this fact and seem to be more open for communication about the potential outcome and possible adjustments.

**Proposition 1.1:** In low-complexity tasks there is the need for understanding and agreement on the importance of smaller change requests, even though the general objectives might be perceived as being very clear.

**Proposition 1.2:** High-complexity tasks demand for a steady communication in which stakeholders are open for adjustments of the general objectives.

### 4.1.2 Shared understanding of work environment and task complexity

The dimension of shared understanding of each other’s work environment mainly focuses on the work practices, roles and routines of the respective department (Nelson and Cooprider, 1996). All respondents in our interviews agreed that there needs to be at least a basic understanding of the partners’ work practices. Depending on the complexity of the task, we found very different results of what or how much to understand of each other’s work environment.

Especially in low-complexity projects the business does not seem to understand the work practices in the IT department in very detail. While respondent U believes that a more detailed understanding of the routines would have helped the business partners to understand the challenges in the development process, respondent J argued that it is not the job of the business to understand how the technical system is being developed: “The business unit does not need to know if I use Apache or IIS. They do not care about the functionalities of a web server. They just want to know that they need to open a web browser and log in with their personal ID and password.” In most low-complexity projects, the understanding of the business for IT work practices has been described as being superficial, which has been taken as a matter of course. Whether this is the ideal state might be questioned.

Indeed we received several (indirect) complains when we spoke about this topic. Respondent O provided an example where a business professional consequently asked for an additional functionality for the developed software “which was basically a good idea but would have taken us more than one year to implement it”. The business partner went to the head of IT and argued it would not take more than 3 months to implement the functionality. In the end, the IT department had to implement the additional functionality and it took them more than one year. In another example, raised by respondent U, the business unit consequently demanded an additional functionality until an IT professional pointed out that this type of functionality would legally be not possible according to the Data Protection Act.

More complex and innovative projects on the other hand (like I) might even demand for a mutual agreement (which might be the result of an ideal shared understanding) on the work environment (in I: mutual agreement on the applied development techniques in the project). The respondent argued that this is necessary because in complex and large projects like this all team member (business and IT) are very much involved in the development process; maybe more than in other low-complexity projects in which the responsibilities and roles are much more defined and modular.

**Proposition 2.1:** The lack of business side’s interest for the IT work environment, which is more likely in low-complexity tasks, can result in cost intensive ignorance.

**Proposition 2.2:** In high-complexity tasks the partners should not just share an understanding but even agree on the validity of the work practices.

### 4.1.3 Shared Understanding of meaning of words and task complexity

Another dimension of shared understanding that we found as being dependent on the level and type of complexity is shared understanding of the meaning of words. In the interviews, we found evidence
that projects that are more complex exhibit a higher intensity of communication. Here, it is more important to avoid misunderstandings by establishing a shared understanding of applied words in the communication process (D: “we invest a lot in language skills”; E: “It starts with the dialect or accent but also includes the choice of words”). Misunderstanding caused by a false interpretation or even use of words can be very expensive because all discussions and further steps which result from this misinterpretation can harm the project success (M). These findings are backed by other studies in the context of ‘complex’ IS development that adopt the use of language as a key determinant in the collaboration process (e.g. Charaf et al., 2013; Chua et al., 2012).

In more standardized projects, the client expects from the provider to understand the words (A) or the partners even implemented a glossary for terms and concepts within the standardized process (B, O). Respondent O argued that due to the high standardization and documentation of the process there have not been any misunderstandings due to false interpretations; all more ‘complex’ words have been listed in a glossary, which is used not only by new but by all team members.

**Proposition 3.1:** In low-complexity projects a glossary can be sufficient to achieve and maintain a shared understanding in the meaning of words.

**Proposition 3.2:** High-complexity projects demand for larger investments into the language skills.

### 4.2 Impact of task relevance on Shared Understanding

#### 4.2.1 Shared Understanding of objectives and task relevance

Whether the relevance of the task is of strategic or operational nature has an impact on the type of objectives in which there should be a shared understanding. Tasks that are conducted to support the operational business do not need to be intentionally adjusted to fit to the strategic objectives of the company. This finding might contradict with the alignment idea of Henderson and Venkatraman (1999). The respondents in projects with operational relevance argued that their projects are either not affected by the strategic business objectives because they do not directly fit into the portfolio (U) or the project objectives might be only indirectly affected by strategic objectives because these project aims to support strategic core competencies of the company (M). Thus, tasks with operational relevance might not be directly aligned to the strategic objectives of the company but indirectly because they tend to support core business processes. Nonetheless, respondents in this context argued, that it is not important for the project success to be aware of the strategic objectives of the company but more of the specification of the core process they aim to support.

Tasks – e.g. requirements and use cases attached to the task – with strategic relevance are directly formed by the definition of strategic objectives of the company (R). Thus, in strategic relevant tasks “you need to have an understanding for the strategic objective” (C; I).

We can exclude that this finding is a result of a variation of task complexity but is attached to the task relevance. While project I is a highly complex innovation project but project C develops (simple) add-ons for a running business application, both projects have a high strategic relevance in common. This supports our argument that the more strategic relevance of the collaboration is being perceived, the more important the understanding for strategic objectives becomes. This finding is supported by the literature on strategic alignment, in which the authors consistently highlight the importance of understanding long-term objectives (e.g. Cohen and Toleman, 2006; Preston and Karahanna, 2009; Reich and Benbasat, 2000).

**Proposition 4.1:** Tasks that mainly aim to support the operating business require (only) a shared understanding of the task-specific objectives.
Proposition 4.2: In tasks with strategic relevance there needs to be a shared understanding of the higher strategic objectives of the company.

4.2.2 Shared Understanding of Work Environment and Task Relevance

The next important dimension of shared understanding in tasks with operational relevance has been stated as the IT’s understanding of the work environment of the business. In the case scenario described by respondent A, the business partner expects the provider to fully understand the business side’s work environment: “That [the IT] knows how our data center works is for me as a matter of course. They get paid for that”. That this might not always be the case has been shown in case G in which the external IT partner did not bring the correct documents to enter and maintain the desktops at the client’s properties. Both projects are characterized by a very low level of strategic relevance.

In addition, we found indications that business does not only assume the IT professionals to be informed about the business but that business professionals often show no interest in the work practices and environment of IT professionals if the outcome is not strategically important for the business. In case U, the respondent complained because the business people showed no interest in the IT work and that they should “at least know the programming language in which the software is written”. On the other hand the IT professionals in this case tend to generalize the business people by saying that “these stupid business guys do not know anything about IT and I can never explain it to them” (U). In this specific case the software that had been developed was a new product for which the firm has not been known for – i.e. it was no product of the strategic portfolio – yet. Because there was no strategic value perceived by the business professionals, who had to sell the product, they showed no interest in the development in general.

Similar problems occurred in project P, which as well has not being perceived as being of strategic relevance. Nevertheless, the business manager noticed at a very early stage of the project that “if you keep IT personnel stupid, do not be surprised when they act actually stupid”. Thus, he proclaimed – as he called it – project transparency as a critical factor in the collaboration between business and IT staff. By this, he meant to inform the IT personnel not only about the requirements but also about reasons for and effects of these requirements.

Focusing on strategic relevance of the task and understanding of the work environment all respondents raised the critical importance for not only understanding the work practices to a specific level, but as well to understand the market behaviors and technology trends. These findings correlate with previous studies like Preston and Karahanna (2009) or Johnson and Lederer (2007).

Proposition 5: In operational tasks, team members tend to underestimate the relevance of the understanding for the work environment of each other which might lead to relational problems.

4.2.3 Shared Understanding of meaning of words and task relevance

Focusing on the meaning of words in strategic and operational tasks, we did not uncover any differences in these two types of understanding. Obviously, in tasks with high strategic relevance, all team members needs to be aware of the strategic objectives to countervail misunderstandings due to misinterpretation of terms and linguistic concepts. Nonetheless, this aspect is addressed in the concept of shared understanding of objectives, but not meaning of words.

Proposition 6: Task relevance has no impact on the characteristics and importance of a shared understanding on meaning of words.
4.3 Summary of the key findings

Table 3 provides a summary of the key findings determined in the case studies.

<table>
<thead>
<tr>
<th>Complexity</th>
<th>Relevance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objectives</strong></td>
<td>Even though the objectives might be perceived as very clear in low-complexity tasks, there is still the need for managing smaller ongoing change requests. High-complexity tasks on the other hand demand for a steady communication in which stakeholders are open for adjustments of the general objectives. In strategically relevant tasks there needs to be a shared understanding of the higher strategic objective of the company. Operational tasks require (only) a shared understanding of the task-specific objectives.</td>
</tr>
<tr>
<td><strong>Work Environment</strong></td>
<td>Even though in most low-complexity tasks the business unit does not seem to be interested in the work environment of the IT work practices, we found indications that this can result in cost-intensive ignorance. For high-complexity task on the other hand we found indications that the partner’s should not just share an understanding but agree on the validity of the work practices. In operational tasks team members tend to underestimate the relevance of the understanding for the work environment of each other which might lead to relational problems. Strategically relevant tasks demand not only for a shared understanding of the work practices but as well for market mechanism and technological trends.</td>
</tr>
<tr>
<td><strong>Meaning of words</strong></td>
<td>While in low-complexity projects a glossary can be sufficient to achieve a shared understanding in the meaning of words, high-complexity projects demand for more investments into the language skills. (No moderating effects found)</td>
</tr>
</tbody>
</table>

Table 3. Key findings from the case studies

Complementary, Figure 3 visualizes the key findings determined in the case studies.

5 Conclusion

Summing up, similar to the variety of team sport games we found very distinctive ‘game settings’ – like complex innovation development or standardized data center management – in which business and IT professionals interact to jointly score, sometimes more, sometimes less, predefined goals. While the IT system is the ball in all of these games, the settings defined by the complexity and relevance of the game highly impacts the player’s moves and interaction behaviors. Similar to Jogi Löw, the coach of the current world soccer champion team, our task in this study was to analyze the game(s) and to determine the players’ behaviors and strategies regarding the development of shared understanding. But, in contrast to Löw we focused on more than one concrete game and analyzed the impact of different case settings on the course of the game.
By analyzing 21 different collaborations in explorative case interviews, we determined the impact of two important context factors – task complexity and task relevance – on the importance of the dimensions of business/IT shared understanding. We show that the meaning and importance of the single shared understanding perspectives depends on the practical context classified by the collaborative task.

Our study helps to gain deeper insights into the configuration of the shared understanding dimensions; the detailed conceptualization of the SU dimensions highly depends on the contextual situation within the specific business/IT collaboration. The key findings can be highlighted as follows:

The dimensions of shared understanding can only be sufficiently described as a function of the context in which they are developed. The context provides us further insights into the dimensions of shared understanding. Academics and professionals agree that a shared understanding of what to achieve in a collaboration (i.e. objective) is critical in any kind of collaboration. We could show that especially in low-complexity projects it is not enough to just analyze the shared understanding of the predefined objectives, but as well the shared understanding of change requests affecting facets of the objectives. This has been best described in interview O, in which the defined objectives have been clear for everyone but the relationship between business and IT has been negatively affected by the amount of “absurd” change requests.

On the other hand, especially in complex projects there might not be a clear understanding of the objectives in general. It is more about the team process to discover and exploit the characteristics of the potential outcome. This ‘shared non-understanding’ of the objectives did not seem to negatively affect the mutual performance because team members seemed to be more open minded for a mutual definition of the objectives and of potential adjustments of the objectives during the progress of the project.

The impact of management actions to create shared understanding – like implementing a glossary or establishing regular meetings – might differ between the collaboration forms. With regard to the recommendations of how to achieve shared understanding which can be found in several research studies, our research highlights the importance of including the specific context when providing recommendations and governance mechanisms. As example, we found indications that in low-complexity projects it might be sufficient to implement a glossary of the most important terms and definitions, while projects that are more complex demand for further investment into language and communication skills.

These findings provide detailed recommendations for future research in this domain by highlighting the importance of precise determination of the present context characteristics. As stated in the example above, we found that it does not always mean that team members are not aligned if they do not share an understanding for the exact outcome of the collaboration, but that the outcome is so fuzzy that the team member have not yet finally decided about the exact outcome features (see section 4.1.1).

Some limitations of our study should be considered in subsequent research. First, although backed by literature, we cannot limit the set of reasonable context characteristics to only complexity and task relevance. Second, our cases consist of only one perception on the project – either from the business or the IT side. In many cases, it would have been very interesting to analyze the perception of the other part of the collaboration and see if these perceptions match. By this, we would have been able to further illuminate potential conflicts due to diverge perceptions, or validate subjective perceptions. Accordingly, in future research we will collect cases with multiple respondents who provide insights from both the IT and business side in the same case. Third, due to the explorative nature of our study, the findings provide only a first insight into the relevance of dimensions of shared understanding in different business/IT collaboration. To further validate these findings, a more structured and theory-driven approach is needed. Methodologically, we suggest both explanatory case studies in which different project-related partnerships are evaluated and later on a structured survey across multiple types of business/IT arrangements. However, overall our analysis could add new stimuli to the ongoing research on the importance of shared understanding and will hopefully contribute to more effective ball games in the business/IT arena.


