Individual IT roles in business-IT alignment and IT governance

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Abstract
The importance of alignment between business and information technology (IT) for generating IT business value has been emphasized in many research papers. Current literature broadly supports that capable and sustainable enterprise architecture is essential to support business processes as well as future agility. In that respect, individuals performing the role of an enterprise architect are at the core of the interface between business and IT and their relationship with the business side is crucial to generate IT business value. Employing a qualitative study we show that competencies such as profound work experience and business-related topics serves to bridge the IT-business gap and may foster alignment. This result contributes to alignment and governance literature as it emphasizes an individual level antecedent of business-IT alignment.

1. Introduction
No other topic has been as consistent at the top of the list of chief information officers’ (CIOs) concerns as business-IT alignment [10]. Indeed, this has been the case for the last 20 years and the issue continues to be relevant. This fact alone justifies the need for researchers and practitioners alike to continue exploring the issue, learning about it, and finding applicable solutions. The relevance of the topic business-IT alignment is directly related to the importance that technology has assumed in contemporary companies. In the last 30 years, nearly all businesses have integrated information technology (IT) into their processes – use of computerized interfaces, networking systems and computer-assisted machinery, to name but a few examples. Today, nearly all companies depend heavily on IT; and nearly all employees deal with IT on a daily basis – its use has become matter of fact. However, it is not a matter of fact that IT is used to its full potential; nor that it contributes to positive development of the business strategy; nor that it is well accepted by its end-users. IT in itself does not automatically create business value; people create value by using IT. And this is the point where business-IT alignment becomes an issue.

Business-IT alignment, in general terms, can be viewed as a partnership, where both sides learn constantly from each other, understand and support each other, evolve together and work together towards the same goals. These relationships span the strategic level between CIO and CEO as well as the operational level between line managers and employees on both the business and IT sides.

Since this scenario is far from reality in many companies, CIOs keep pointing out business-IT alignment as their top concern, year after year and a vast body of research about alignment evolved.

Today, most researchers agree that there is no silver bullet to achieving business-IT alignment [4, 5, 24]. Achieving alignment is rather a continuous process and there are many contributing dimensions to the issue [12].

Among those is earlier IT literature that underlined the importance of formal organizational structure and IT decision-making rights in achieving alignment [26]. Recently, there is a growing group of researchers that have recognized the importance of informal structures as a crucial component contributing to alignment [18, 26]. They argue that the “informal structure can dramatically influence an organization’s performance, and can also be strategically utilized” [4].

Researchers over the past three decades have also intensively focused on the topic of IT governance [6, 16], which is intertwined with business-IT alignment [12]. Similarly, within this area, a line of researchers has recognized that informal mechanisms occupy an important role in IT governance, indeed as important as formal mechanisms such as hierarchy, role definition or monitoring strategies [15, 20]. IT governance mechanisms, i.e., the structures, rules, processes, procedures and communication approaches each company implements in order to secure IT governance, can be either formal or informal in nature, and both types are needed in order to assure the effectiveness of IT [16]. In this context, process roles form a particularly important IT governance mechanism. Process roles are needed to enable a
business process by assigning responsibilities to specific people or groups of people to maintain certain processes, coordinate process activities as well as process changes. An important example of such process role is the enterprise architect responsible for maintaining the Enterprise Architecture (EA) that describes essential components of a business and their interrelationships. The development of the EA discipline and the implied complexity resulted in the evolution of a new profession called “enterprise architect” [21] fulfilling that process role. The role of an enterprise architect is often anchored in the organizational structure of a firm to illustrate the importance and continuity of this role. Frequent interchange of the enterprise architect with business units and involvement into projects shall ensure the alignment of IT with business. As the implementation of an EA is an endless, complex and interdisciplinary process, highly skilled enterprise architects with various competencies are required [22].

The work of Bredemeyer and Malan [2] provides a competency framework enabling architects to enhance their competencies. The study of Strano and Rehmani [21] identifies miscellaneous functional roles and necessary competencies for enterprise architects. Further competencies are provided by research from [14], as well as from Unde [23]. Ho and Frampton [9] present a competency model for the IT workforce, illustrated by the role of architects. The research of [7] provides insights about how architects carry out their work, developing new IT systems.

In spite of all that insights, research addresses alignment and governance issues mostly at an organizational level and separated from process roles and the individual level of people fulfilling that role. This is surprising as common wisdom “knows” that processes, including processes of alignment, are necessary but simultaneously needing people filling in the process roles to have an effect.

Therefore, this paper looks at the competencies of enterprise architects working at the important interface between business unit and IT, where partnerships are crucial. It is assumed that defining this process role is an important IT governance mechanism and that improved competencies of enterprise architects lead to an increasing impact of EA on organizational performance [21]. Ultimately, the investments into IT will be more valuable and successful. Therefore, the research question to be answered is:

“What are essential competencies of an IT architect in order to foster business-IT alignment?”

In order to answer the research question, this paper follows the exploratory case study approach. A two-step approach will be applied to collect qualitative and quantitative data. In the first step, executives of business units as well as IT architects are interviewed. All members of the business units have a close work relationship to the IT architects. The qualitative data collected in the interviews are analyzed, compared and synthesized into categories that reflect specific critical competencies. In the second step, the interviewees are provided a questionnaire with a set of competences to confirm/cross-check the results of the first step.

The outcomes of this analysis will be compared to extant literature, so as to derive conclusions and recommendations to management and researchers.

This paper contributes to alignment and governance literature by showing that a specific individual role of an architect is instrumental to achieving business-IT alignment and establishing the architect role is an important governance mechanism. Highlighting an individual level antecedent of business-IT alignment complements literature that focuses on organizational level factors such as shared knowledge.

2. Theoretical background

2.1. Business-IT Alignment

The achievement of business-IT alignment is an unceasing process, as it is influenced by changing market conditions as well as continuous enhancement of technology and business strategies [12]. On the one hand the alignment of IT with business goals and strategy is a prerequisite for the success of a company, as IT supports business processes. On the other hand it has been a top management concern for several years as mentioned in the previous section and a main challenge an organization has to face.

Multiple attempts have been made to define business-IT alignment since it has been discussed for more than thirty years. Even for the expression 'alignment' itself several alternative terms exist; like 'balance' from Henderson and Venkatraman [8] or 'linkage' from Horner Reich and Benbasat [18]. Luftman and Brier [11] define alignment as “applying IT in an appropriate and timely way and in harmony with business strategies, goals, and needs.” In their study Luftman and Brier [13] identified enablers and inhibitors of alignment. While enablers make it easier to achieve alignment, inhibitors interfere with the balance between business and IT in an organization. Based on their findings, [13] developed a general process to achieve alignment.

Achieving alignment seems to be a difficult task, and so is sustaining alignment, which is the last step of
the process. However, alignment may be reached at three different levels, in particular at the strategic level, the tactical level and the operational level. The following paragraphs describe the three different levels in more detail.

2.2. IT Governance

As technology has gained terrain in corporations, top managers have needed to ask themselves how to leverage their IT investment. IT, per se, does not create business value; the efficient use of IT does. That is the territory of IT governance: to make sure IT is used efficiently. IT governance comprises a set of organizational structures and processes that define who makes decisions, why decisions are made, and how the decision-making process occurs [12]. The present study focuses on the ‘how’ question, i.e., on the mechanisms used to achieve the benefits of IT governance, more specifically on how IT governance mechanisms in form of process roles relate to business-IT alignment.

Early research was concerned with control mechanisms and top-management involvement in IT decisions, IT decision-making responsibilities [1] and IT organizational roles [3]. By the end of the 1990’s IT governance was established as a topic in IT literature, and two main streams of research were identified: (1) forms of IT governance and (2) IT governance contingency analysis. The first stream of research deals with the formal side of IT governance: IT decision-making rights, structural mechanisms, and governance design (centralized, decentralized or federal/hybrid).

The second stream focuses on the contingencies that influence IT organizational structure decisions, i.e., researchers from the second stream attempt to understand which governance design and organizational structures fit which type of organization.

The first stream of research is relevant for this study, in particular the structural mechanisms. As researchers deviate from the closed centralized/decentralized dichotomy, expanded concepts of organizational structures and structural mechanisms emerge. In this respect, the notion of horizontal structures refers to the communication and collaboration happening outside the hierarchical ladder, cross-departmental collaboration and also informal communication.

Although the focus of IT governance literature today is still mainly on the formal structures, some researchers do recognize the important contributions of horizontal mechanisms play in their contribution to IT effectiveness. [17] have identified a set of formal and informal governance mechanisms and explored how they relate to IT performance.

2.3. The architect role

As in the case of EA, in the literature a common definition of IT architecture is missing. A comprehensive definition of IT architecture is provided by Ross [19], who stated that on the enterprise level “IT architecture is the organizing logic for applications, data and infrastructure technologies, as captured in a set of policies and technical choices, intended to enable the firm’s business strategy”.

IT architecture aims to offer such flexible concepts to allow an accelerated adoption to new requirements of the business. By having an architecture in place, organizations can benefit in various ways. Depending on the particular organization, the benefits may vary, as one potential benefit may be more relevant to one organization than to another. A common benefit is a result of the definition and usage of standard systems instead of multiple suppliers and of in-house developments [25].

Within the context of an Enterprise and IT architecture, the role of an architect is defined.

In his essential book “Architect?: a candid guide to the profession” Roger K. Lewis [27] describes the development of the architect profession from its early beginning until today. Over the years, the complexity of today’s constructions became a matter for experts. Therefore the original role of the architect changed and it is no longer enough to be an artist, but to have managerial and organizational abilities, as well as negotiating and marketing skills, political sensitivity, legal acumen and business connections [27]. Although the role of the enterprise architect is more like that of a city or urban planner respectively McKeen and Smith [14], Lewis’ description is also suitable for the domain of IT. Contemporary IT departments are an accumulation of experts: security experts, cloud experts, network experts, server experts, to name just a few. Moreover, the role of the enterprise architect is changing and requires a lot as the following sections show.

Although organizations like The Open Group or the International Association of Software Architects (IASA) have undertaken approaches to define the role of an enterprise architect more precisely, there is no definition commonly agreed on. Consequently, different names of similar roles like IT architect or enterprise business architect make a common definition more complicated.

Possibly the most simplified view on the role of an enterprise architect is provided by [2], who stated that “architects create architectures, and their responsibilities encompass all that is involved in doing
so”. However, the role encompasses much more than this simplified statement indicates. The activities of an enterprise architect are not only technical activities, but do also have strategic and political elements as well as activities performed by a consultant. Hence, the responsibilities comprise a wider range than only technical activities. Important enough, the statement emphasizes the significance of managing the demand from the business and supporting it with practicable solutions.

Research has shown that many organizations divide IT architecture into different roles. Thus Figueiredo et al. [7] found similar patterns based on three roles: enterprise, solutions and software architects. Similar results were discovered by Unde [23], who found three roles, too, whereas the TOGAF Architecture Skills Framework provides multiple architectures and architect roles. Hence, literature provides several additional roles associated with enterprise architects. The IASA suggests four different architect roles. The first role is the role of the enterprise architect. According to Figueiredo et al. [7], the work of this role supports the business strategy with information and IT solutions. Moreover, the role comprises the responsibility for the overall IT strategy and the alignment of IT investments to the business strategies of an organization [7]. Therefore, a deep knowledge of business, IT, enterprise architecture, and economy experience is required.

The work of Unde [23] suggests three different variations of the architecture role. The first role, ‘enterprise architect’, is similar to the previous description of Figueiredo et al. [7] and the role is responsible for implementing the strategy for IT and ensuring the alignment of IT investments with the business strategy [23].

The second role intended by the IASA is the role of the business architect, capitalizing on IT solutions for a whole organization. Thereby it is critical to have a detailed understanding of how an organization works and what the business needs are [7]. Akenine [28] points out that these architects are key to current projects as they use their influence to guarantee that the business gains benefits out of the corresponding project.

The final role suggested by the IASA is the role of the software architect, which is similar to the role of the ‘technical architect’ in Unde’s elaboration. In contrast to the business focus of the solution architect, the role of the software architect is more focused on technology, according to Figueiredo et al. [7]. Unde [23] indicates that technological expert knowledge is necessary. Furthermore, the emphases of this role are among others dealing with functional requirements and ensuring software quality, such as performance and reusability [7].

3. Data and Methodology

3.1. Methodology

In order to gain insights about a topic of interest, an exploratory study is a valuable means [29]. Literature research as well as the interviewing of experts are ways to conduct exploratory research. A major advantage of this research approach is its flexibility and adaptability to change [29]. This is necessary to build on the views and statements of the interviewees to develop the interview further and gain deeper insights into the research topic. It is important to develop an understanding of the context as well as an understanding for the individuals and their views. On the one hand, this refers to the question which competencies are important to the participants. On the other hand it is important to see what the participants think of their experience with the role of the IT architect. However, the exploratory nature implicates that interviews are relatively unstructured. Therefore, the quality of the contributions from the interviewees plays a major role for the progress of the research. To ensure a high quality standard and to increase reliability, only individuals having a particular portion of experience as well as working on a specific hierarchical level respectively working in the role of IT architect were selected. Details about the interviewee’s profile can be found in section 3.3.

Since a small sample of subjects is more suitable than a large one and inductive research is especially concerned with the context in which events are taking place, inductive research was chosen as the approach to follow [29]. Semi-structured interviews were chosen as qualitative data collection method to get different viewpoints on the research topic. This type of interview offers the opportunity to ask more profound questions, when the answer of an interviewee needs more explanation or greater details. When interviewees talk about their experience and provide examples from their work, as well as when it is necessary to understand the reasons for their attitudes and arguments, this approach is especially valuable.

Therefore it is essential to ask further questions to be able to collect a rich and detailed set of data. Following this approach allows the study to explore the area of an IT architect’s competencies and research the associated findings. According to Easterby-Smith et al. [30], semi-structured interviews are the most advantageous approach to gain data, when the number of questions is large, the questions are either open-
ended or complex, or the sequence and logic of questioning needs to be changed. Moreover, Saunders et al. [29] mention the semi-structured interview as a favorable method when it is significant to establish personal contact to the interviewee. Personal contact and trust between the interviewer and the interviewee is indispensable to discover what individuals really think and what their candid opinion is. The recommendations derived from the findings of this study will find better acceptance when they have a valid base.

3.2 Case Environment

The service company (briefly called Logistics Provider) was selected as it faces the current challenge of enhancing partnerships between IT and business units and because of the paramount importance of their logistics systems where we can expect to see IT effects.

Logistics Provider is internationally present and is known for offering good quality to the best price in a wide range of different products.

The Logistics Provider’s IT department is the consulting partner for the other departments of Logistics Provider and provides efficient IT solutions and technologies for the IT department itself and other parts of Logistics Provider. The key tasks of the department comprise the implementation of IT solutions according to the demands from the business units. It is thereby important to identify and use synergies within Logistics Provider. For instance, it is mandatory to check whether an IT solution is available and in use in some part of Logistics Provider, before market research is conducted for a new system.

Further tasks are the development of IT concepts as well as the selection of appropriate IT systems and technologies. Moreover, the IT department’s responsibilities comprise ensuring the operation and further development of applications. The selection, implementation, operation and further development of applications are the core of the IT department.

The common role of the enterprise architect is comparable to the role called ‘IT architect’ within Logistics Provider. The IT architects serve as the single point of contact for the Logistics Provider’s business units and take on the responsibility for the IT services of the respective business unit. The Logistics Provider’s IT architects are associated with one or more business units. As advisors, the IT architects consult the business units regarding the business processes as well as in terms of applications and technical questions. Furthermore, the IT architects are responsible for the IT services that are provided for the business units.

One of the main tasks of the IT architects at Logistics Provider is to take on and evaluate the requirements of the business units. Considering general IT guidelines and compliance, the IT architects elaborate proposals for the implementation of requirements and process improvements. In doing so, the IT architects translate the requirements into technology and develop a concept as to how applications support the processes and demands of the business unit. During application and system selection, the IT architects are in charge and control the decision process in line with the IT architecture management process.

3.3 Data Collection

Eight interviews were conducted in 2014. Four interviewees work as IT architects for the Logistics Provider’s IT department. The remaining four interviewees are either executives from various business units of Logistics Provider and have a close work relationship with IT architects or work as business unit architects.

The interviewees were purposefully selected and asked to focus on their experience with the IT architect as well as the competencies and skills that they have experienced in their work or that they would expect from a superior IT architect. The selected IT architects are the most knowledgeable and experienced persons of the Logistics Provider IT, whereas the individuals from the business units are without exception managing directors with long-term work experience. Although some interviewees have not been in their current position for more than two years, they all have long-term experience in former companies. Moreover, the selection of individuals from different business units enables a broader view with a diversity of perspectives on the research topic. All the interviewees added significant insights and specific details about their perceptions and views on the role of the IT architect to the study. The definition of these clear participant criteria – a relevant degree, hierarchical position and long-term experience in the domain as well as in the current position – was an important means to ensure the reliability and quality of interview data.

Since all interviewees gave their permission, all interviews were recorded using audio technology, which provided the possibility to review the audio content repeatedly during the data analysis.

Although the progress of every interview was different, depending on the answers and details provided by each interviewee, an interview guideline was developed to ensure the collection of background information from the interviewee, as well as to cover certain areas of interest during the interview.
At the end of every interview, the interviewees were given a questionnaire containing the derived IT architect competencies from the literature review that have been performed by using the search string “architect*” OR “competenc*” in major IS journals and journals dedicated to architecture. The following table depicts these competencies:

Table 1. Enterprise architect competencies

<table>
<thead>
<tr>
<th>Competency</th>
<th>Number of papers dealing with competency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Politics Management</td>
<td>7</td>
</tr>
<tr>
<td>Business Strategy</td>
<td>7</td>
</tr>
<tr>
<td>Technical Acumen</td>
<td>6</td>
</tr>
<tr>
<td>Business Acumen, Work Experience, Economy Experience</td>
<td>6</td>
</tr>
<tr>
<td>Leadership</td>
<td>6</td>
</tr>
<tr>
<td>Communication</td>
<td>5</td>
</tr>
<tr>
<td>Project Management</td>
<td>5</td>
</tr>
<tr>
<td>Business Process Design</td>
<td>5</td>
</tr>
<tr>
<td>Problem Solving</td>
<td>5</td>
</tr>
<tr>
<td>Design / Architecture Development</td>
<td>4</td>
</tr>
<tr>
<td>Relationship Management</td>
<td>4</td>
</tr>
</tbody>
</table>

The questionnaire was compiled by the author of this study and was tested before being used in the interviews. First, the interviewees were asked to rate the competencies in the questionnaire. Afterwards, the interviewees were requested to rank their top five competencies from the ones they rated as crucial. This additional data collection was conducted to add another source of data to the study and verify the results of the interviews.

3.4. Data Analysis

The anonymity of the interviewees is important and was assured to every participant. Therefore, instead of the interviewee’s name unique identifiers were used.

As a first step, a transcript from the audio recording of every interview was compiled soon after the interview took place. This process was supported by computer aided qualitative data analysis (QDA) software Atlas.ti. Additionally, the transcripts were enriched with contextual data like the participants’ non-verbal communications and the usage of symbols such as ‘(.)’ to represent a short pause or ‘((laughs))’ for the interviewees’ actions.

The next step was to perform data cleansing, ensuring the accuracy of the transcripts by correcting transcriptions errors. This was done with the utmost care to further increase the data quality.

After the data cleansing, the next activity was categorizing the interview data. First, the competencies derived from the literature review were attached to sections of the interviews, where they had been mentioned by the interviewees. Each competency was thereby used as a code or label. This approach allows rearranging the original data into analytical categories. In the next step of the data categorization, the interviews were carefully read to discover sections where it was not the exact competency that was mentioned by the interviewee, but a description that can be assigned to a specific competency was given instead. These sections were labeled as well with the appropriate competency. Even more importantly, this step of the analytical process was conducted to discover possible competencies that have been mentioned by the interviewees but have not been brought up in the literature review. Likewise, these competencies were coded.

4. Results

The interviews reveal that business acumen associated with broad work experience is the most important competency of an IT architect in the view of the interviewees. This finding is in line with the results from the literature review [7, 9]. Several interviewees mention that a background from business is desirable. The participants expect a better understanding for the challenges of the business units if the IT architect is able to speak the same language and uses specific business vocabulary. Hence, the understanding of the business unit is key in order to be able to translate the requirements into IT. Moreover, the IT architect needs a fine grasp for the functional processes of the business unit. Interviewee I3 mentions that they are able to make functional suggestions due to their long-term experience in this field. They doubt that they are able to do that in such a qualitative manner for another business unit as they lack work experience in this area.

This statement clearly highlights the importance of experience and business acumen in the relevant field. However, it also indicates that IT architects cannot switch easily to another business unit. It takes a long time to reach this kind of experience, as interviewee I7 put it: “In my view an IT architect needs a lot of know-how and very broad knowledge. This can only be built over time. It takes a while until the IT architect has acquired this knowledge.” However, a big challenge for the IT architect is to keep pace with
current developments on the business side as well as on the IT side. Although rarely anybody is able to know everything in detail on both sides, interviewee I3 emphasizes that it is the approach to understand the complete functional and technological spectrum.

The results of the interviews show a broad consensus about the importance of business process design as an important competency of an IT architect. This finding is consistent with the findings in the literature [7, 14], although the results from the literature review rate this competency as less important than the interviewees do. In the interviews understanding, the definition, as well as the optimization of business processes are the determining elements. Multiple interviewees emphasize the importance of understanding the business processes in order to be able to design or redesign them. Interviewee I3 mentions that they need to understand what the functions of a business process are in order to bring the details together and to decide what is necessary to do. The interviews reveal contrasting views about the moment the IT architect should be involved in the design of business processes. On the one hand, interviewees assign the entire responsibility of designing a business process to the business unit. On the other hand, an early involvement allows the IT architect to verify if the relevant IT system has the required capabilities available and is able to possibly influence the process design. According to interviewee I2, the early involvement of the IT architect offers the chance to check whether a standard process of a system may be suitable to comply with the requirements. Additionally, the IT architect is able to reveal interdependencies between systems and requirements. In contrast, I6 indicates that the business unit is potentially able to design the target process itself and should involve the IT architect afterwards to take up the impulses and ideas for improvement. This view is supported by I4, who states that the IT architect should be an advisor to the business unit who is able to challenge the business processes and to eliminate conceptual barriers. Although the interviewees acknowledge the importance of the competency, the interviews uncover conflicting views on the depth of involvement, depending on the role of the interviewee. While the interviewed IT architects prefer an early involvement, the other interviewees argue that the IT architect should be involved as a consultant at a later date indicating a potential area of conflict.

The results of the interviews identify business strategy as another important competency of an IT architect. Thereby it is rather the task of the IT architect to develop the business strategy, but to know this strategy. I8 points out that knowledge about the business model of a business unit is essential to assess the requirements. Moreover, this kind of knowledge is indispensable in order to derive the suitable IT strategy from the business strategy. To put it in the words of I7, one “does not seek a goal because there is good software for it.” In this view software supports business processes not the other way round. Frequent exchange of information between the business unit and the IT architect helps to get a common understanding of the business strategy and allows the IT architect to accompany the process. This in turn enables the IT architect to align IT and business strategy.

Knowledge of systems is mentioned as another important competency of an IT architect by the interviewees. This finding is in contrast to the literature review [14] and work on TOGAF, which ranked this competency not among the most important competencies. According to I1, an IT architect needs knowledge of the application landscape as well as systems and their capabilities. Moreover, I1 mentions that it is not necessary for IT architects to be able to code but they must have knowledge of current products at the market and they need to gain knowledge as to which system may solve specific challenges. This statement provides a bifocal perspective. On the one hand, IT architects should know their actual landscape and systems in use. On the other hand, knowledge of the latest trends in the market is required in order to support the future developments of both the business unit and the company. As business processes rarely end at the borders of a business unit, many interviewees point out that the knowledge of the IT architect should not be limited to one business unit. Instead, the perception should be comprehensive and take at least interfaces to neighboring business units into account. In the end the goal is what I2 expresses when he says that “a system should make life easier for employees”.

Communication is key for collaborating with partners. This view is supported by I2, who states that “without communication nothing is going to work”. The interviewees argued for an open, direct and proactive communication style. I3 highlights that open communication is very important. Communicating is what they do all day, which is not surprising to them since the role of the IT architect sometimes is called “translator” or “interpreter”. In the viewpoint of I4, communication is the only chance IT architects have in order to solve problems, while they are working at the interface between business unit and IT. They need to communicate in both directions, often without having managerial responsibility for the respective employees. It is important to I4 to point out that they refer to verbal communication, not to writing e-mails.
However, a premise for open communication is trust, which is often mentioned in combination with communication by the interviewees. This is emphasized for example by I3, who stated that cooperation works best when there is mutual trust. I3 proceeds by mentioning that one may work together on a “professional level”, but this cooperation will not be as prolific as when there is trust. The interviewees being asked how trust is built think that functional knowledge about the business unit, IT know-how, as well as the possibility to consult the IT architect as an advisor are important. Furthermore, positive project experiences together with the business unit are helpful to build trust. However, the interviewees also mention open communication as such a requirement. In this point of view trust and open communication are mutually dependent. Whereas the importance of trust is emphasized very emphatically during the interviews, it is not a component of the results from the literature review.

In the interviews, openness is often mentioned in combination with communication and trust. To I3, only interpersonal elements like openness and honesty are essential, also for the way of communicating. According to I3, IT architects need to be open to approach other people. Furthermore, they need the ability to put oneself in the position of the counterpart. This opinion is also supported by I2, to whom the ability to take the position of the counterpart is crucial, too. Openness does not only mean being open-minded, but also includes the ability to listen to others and try to understand their challenges. I4 emphasizes that openness also means to abandon one’s point of view as well as to sometimes avoid bureaucracy to reach a common goal. Openness is a crucial competency of an IT architect in order to meet daily challenges and requirements. This finding is in contrast to the literature review [9], which does not assign as great an importance to this competency.

Project management capabilities are referred to during the interviews as another important competency. This perception is in line with the results from the literature review [7, 9, 23]. Project management combined with experience is often mentioned in the interviews. Many interviewees expect long-term project management experience from the IT architect. The need for project management skills is indicated by some business units involving the IT architect already in the planning phase. This view is also supported by I8, who states that an early involvement enables him to challenge requirements of the business unit. Following this approach allows discussing priorities and the scope of projects at an early stage. I7 points out that the early involvement into the planning of projects and further themes is crucial to the IT architect as this is part of the business unit’s strategy implementation. However, project management includes not only strategic and planning elements. I2 emphasizes the importance of managing resources as well as the implementation itself as a fundamental part of project management. This points to a statement of I8, who mentions that, in the end, it is about the successful implementation of a project.

Although the interviewees mention the importance of business acumen as well as broad work experience, technical acumen is also required for an IT architect. A broad knowledge about hardware and software is a prerequisite in order to be able to assess technological interrelations. Technical acumen in turn facilitates a deeper understanding of systems behavior. The interviewees show different views concerning the required depth of technical acumen. Although most respondents state that a broader technical knowledge is sufficient, for example I3 is of the opinion that it is helpful for the IT architect to be in control of the technology. I6 suggests that technical acumen is a valuable competency, as the IT architect is part of the software selection process. In order to prepare a criteria check list, technical acumen is required to assess the corresponding technological criteria. The interviews support the findings from the literature review [9, 21], yet assigning less importance to this competency than the literature does.

The following table shows the IT architect competencies according to the number of mentions during the interviews:

<table>
<thead>
<tr>
<th>Competency</th>
<th>Number of Mentions*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broad Work Experience</td>
<td>27</td>
</tr>
<tr>
<td>Business Process Design</td>
<td>26</td>
</tr>
<tr>
<td>Business Strategy</td>
<td>25</td>
</tr>
<tr>
<td>Systems</td>
<td>19</td>
</tr>
<tr>
<td>Communication</td>
<td>18</td>
</tr>
<tr>
<td>Openness</td>
<td>16</td>
</tr>
<tr>
<td>Project Management</td>
<td>16</td>
</tr>
<tr>
<td>Technical Acumen</td>
<td>16</td>
</tr>
<tr>
<td>Design / Architecture</td>
<td>12</td>
</tr>
<tr>
<td>Development</td>
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<tr>
<td>IT Strategy</td>
<td>12</td>
</tr>
<tr>
<td>Relationship Management</td>
<td>8</td>
</tr>
</tbody>
</table>

* Interviewees may mention the same competency several times
5. Conclusion

The paper’s research question is “What are essential competencies of an IT architect in order to foster business-IT alignment?”. The answer found shows that the most important competencies are profound work experience and business-related topics that serves to bridge the IT-business gap and may foster alignment. This result contributes to alignment and governance literature as it emphasizes an individual level antecedent of business-IT alignment and at the same time points to the governance mechanism of assigning a formal architect role to influence alignment.

According to the interviewees the most important competency of an IT architect is broad work experience. Under the given circumstances it is hard to imagine that a person without relevant experience is able to do the job of an IT architect adequately. Experience in the relevant field is important. Therefore, it is not easy to interchange IT architects between different business units as they will then lack their most important asset. Hence, as work experience is highly valued, one needs to pay particular attention to this competency.

The findings of the research emphasize the importance of the human interface between the business unit and IT. In this context the competencies of openness, trust, relationship management, as well as communication are relevant. Interestingly, openness is more important in the context of Logistics Provider than within the literature. Moreover, the findings show that the ability to build trust is an essential trait of an IT architect. Even more, trust is the foundation of a prolific relationship between the IT architect and the business unit. Among other things, trust in turn emerges through an open communication style, according to the interviewees. Based on the findings it seems that these competencies are coherent and account for each other.

The research reveals that knowledge of the business strategy is almost equally important in the results of the literature review and of the interviews. The findings from the questionnaire support this result. As already mentioned before, the alignment between business strategy and IT is necessary in order to create long-term value and make IT investments a success. Therefore, a certain knowledge and understanding of the business strategy of the business unit is crucial. The finding of the interviews that IT strategy is an important competency suits the aforementioned context.

Interestingly, the interviews reveal that knowledge about systems is a fundamental competency of an IT architect, whereas the importance is not supported by the literature review and the result of the questionnaires. The interviews exposed that the competency was especially important to the members of the business units. Without any doubt it is an important competency in the view of integration and centralization efforts, which Logistics Provider is undergoing at the moment.

However, several competencies that have not been mentioned before appear in the result of the questionnaires. The competency of problem solving plays only a minor role during the interviews, whereas the competency seems crucial considering the findings from the questionnaires. This applies especially for the business unit architects. The same is true for the competencies of change management and passion. Even change management plays only a minor role in the interviews, although a lot of efforts of IT architects deal with change for people and the transformation of systems.

Four areas of future research are identified. First, it would be interesting to assess the importance of specific competencies in different “alignment” scenarios. E.g., will the importance of technical competencies be higher in scenarios where business-IT alignment is rated as comparably high? Second, competencies might differ depending on culture. E.g., relationship competencies might be more important in collectivist cultures. Third, future research might investigate the differential impact of certain competencies on alignment and thus show which competencies are the most crucial ones in that respect. Fourth, future research may distinguish between architect roles such as technical architect, solution architect, and enterprise architect.

6. References


