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Alignment Framework in Enterprise Architecture Development

Doctoral Consortium

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Abstract

The challenge of business-IT alignment, the increasing complexity of organizations' operations and supporting organization transformation are the main drivers for organizations to adopt Enterprise Architecture (EA) concept. Despite the rapid interest in the EA, organizations are facing challenge to realize organizational value out of it. This challenge can be rooted to the lack of the stakeholders needs and concerns consideration in the final developed architecture which result in low utilization or no acceptance of EA. The enterprise architects and the stakeholders are the main players in the development phase of EA. Literature highlighted the need of alignment framework that can support the enterprise architects to align the development of EA with the stakeholders' expectations. Furthermore, there is a scarcity of academic studies that shed the light on the alignment between the enterprise architects and the stakeholders during the development of EA. Hence, the purpose of this study is to develop a framework that supports the alignment between the enterprise architects and the stakeholders in EA development to ensure a mutual understanding and agreement. The study is guided by the interpretive paradigm to address the research gap through the utilization of a qualitative methodology. The research is using the case study approach to build in-depth understanding of the relationship between the enterprise architects and stakeholders in EA development. The understanding from Multiple Perspectives Theory is used to develop the initial research model to provide initial guidance in data collection and analysis. Currently, the research is at the analysis stage of case study data. The developed framework is expected to support the practitioners in the EA development by uncovering the factors influencing the alignment between the enterprise architects and the stakeholders during the development process. Additionally, the study is building a comprehensive understanding on how the enterprise architects consider the stakeholders needs and concerns in the development of EA.

Keywords: Enterprise Architecture (EA), Alignment, Stakeholders, Enterprise Architects, Multiple Perspectives Theory, Case Study

Background of the Study

The dynamic environment and the increasing complexity of business processes cause challenges for the organizations to see the holistic view of their business. Moreover, the high turnover of IT solutions and the increased reliance of business on IT created a challenge to align business strategy with IT investment (Ask & Hedström 2011; Birkmeier et al. 2013). According to a survey conducted in 2010 by Society for Information Management among 172 organizations in USA, Business IT Alignment (BITA) ranked as one of the top five key issues facing IT executives (Luftman & Ben-Zvi 2010). Hence, Enterprise Architecture (EA) is suggested as an approach to improve BITA (Iyamu & Mphahlele 2014), manage organizational complexity (Drews & Schirmer 2014), and support organization transformation (Agievich & Skripkin 2014).

Lankhorst defined EA, as “*a coherent whole of principles, methods and models that are used in the design and realization of an enterprise’s organizational structure, business processes, information systems, and infrastructure*” (Penttinen & Isomäki 2010, p. 1). The enterprise architects are responsible of collecting information about EA (Buckl et al 2010a). They evolve the EA through a set of models and play the role of managing, communicating, leading and modeling (Clark et al. 2014; Gotze 2013). Despite the variance of stakeholders definitions in the IS discipline but most of these definitions centralized on people who will be affected or can affect the introduction of the new system Pouloudi (1999). The Open Group define EA stakeholder as “*an individual, team, or organization (or classes thereof) with interests in, or concerns relative to, the outcome of the architecture*” (Azevedo et al. 2011, p. 29). In the context of EA, there is no predefined group of stakeholders and based on literature review each study identified its stakeholders based on the case context e.g. Antunes et al. (2011), Postina et al. (2010) and Rajabi et al. (2013). For the purpose of this study, the stakeholders’ definition is limited to *the individuals who are working with the enterprise architects to develop the as-is architecture of the enterprise along with their concerns and needs that shape the to-be architecture in the development of EA.*

Despite the interest of organizations to adopt the concept of EA, the development of EA faces challenges to demonstrate organizational value or effective execution. Rotterdam University conducted a survey in 2008 that shows 66% failure of EA initiatives (Gosselt 2012). In 2009, Gartner identified top 10 EA pitfalls among them wrong selection of architect leader, lack of stakeholders understanding, enterprise architects group does most of the architecting without agreement on the architecture content and the misalignment between IT goals and business goals because enterprise architects are not jointly involved with the staff to develop the business architecture. The enterprise architects are confronted with difficulties while interacting with the stakeholders. The alignment between the enterprise architects perspective and the stakeholders perspective is one of the common difficulties in EA development because both the architects and stakeholders should have a shared understanding of the organization problem and the required solution to overcome it (Nakakawa et al. 2011).

The concept of alignment has been discussed in the context of IS and normally refers to Business-IT Alignment (BITA) whether in enterprise operational level or strategic level. Luftman et al. (1999, p. 3) defined BITA as “*applying IT in an appropriate and timely way, in harmony with business strategies, goals and needs*”. Literature explained that the involvement and the fulfillment of stakeholder needs are the cornerstone for the success and the acceptance of EA (Buckl et al. 2011; Fallmyr & Bygstad 2014; Farwick et al. 2014). Chuang & van Loggerenberg (2010) and Du Perez et al. (2014) clarified that the enterprise architects tend to use technical modeling terms but the stakeholders are expecting business-oriented discussion. So the misalignment between the two worldviews lead to inability to agree on the final architecture which results in unused architecture (Du Preez et al. 2014). In the context of this study, the alignment scope covers the enterprise architects and the stakeholders to agree on the final developed architecture. Hence, the study defines alignment as *develop EA models in an appropriate and timely way in harmony with stakeholders concerns, goals and needs.*

There is scarcity of studies that build an in-depth understanding of the alignment between the enterprise architects and the stakeholders during the development of EA and the lack of comprehensive view of the factors shaping this alignment (Du Preez et al. 2014). Since the enterprise architects and stakeholders are the main actors in EA development, Buckl et al. (2010b) pointed out the need for a framework that guides the alignment between the enterprise architects and the stakeholders. Such framework is expected to support the practitioners in the EA development by uncovering the factors influencing the alignment between the enterprise architects and the stakeholders during the development process. Furthermore, this study is contributing to the body of

knowledge by building a comprehensive understanding on how the enterprise architects consider the stakeholders needs and concerns in the development of EA.

In particular, the research attempts to answer the question:

How could the enterprise architects align the development of EA with the stakeholders' needs?

To answer this main question, four sub-questions are created to support answering it:

Question 1: What is the process of the EA development?

Question 2: What are the roles of stakeholders and enterprise architects in the EA development?

Question 3: What are the factors influencing the alignment between the enterprise architects and the stakeholders in EA development?

Question 4: What framework can be used to support the alignment between enterprise architects and the stakeholders in EA development?

Theoretical Foundation

According to Linstone (1989), the traditional view of a problem within a complex system is dominated by the technical perspective that focuses on the technical analysis to find a solution. However, the human and organizational resources that are used to implement the solution are neglected during the problem analysis. Furthermore, Linstone (1989) explained that the enterprise comprises from a socio-technical system that means technical and social characteristics. Consequently the technical perspective alone is not sufficient to get the real picture (Linstone 1989). Hence, he proposed the Multiple Perspectives (MP) approach in assessing complex problems or systems that involve multiple actors by considering three perspectives Technical, Organizational and Personal (Benjamin & Levinson, 1993 p. 31). The technical perspective is covering the technical aspects and the organizational with the personal to cover the social aspects of the system. The technical perspective is to describe the technical characteristics using a technical lens, the organizational perspective is to discuss the organizational elements and personal perspective includes the individual related elements (Alias & Saad 2001; Linstone 1981). All the three perspectives should be considered because each perspective covers different characteristics that do not exist in other perspectives so limiting the perspective to one or two can be problematic (Linstone 1989). Each perspective has unique features and characteristics described.

The complex problems or systems have range of actors with diverse needs and interests (Mitroff & Linstone 1993). Hence, it is important to identify the main stakeholders involved in the studied problem or phenomenon (Linstone 1989). Any social system has stakeholders so it is essential to follow a systematic approach to identify the main stakeholders influencing the problem/system (Mitroff & Linstone 1993). Because the complex problem is characterized by organizational and personal perspectives, it is expected to notice different aspects when applying the MP theory for the same problem in different organization (Mitroff & Linstone 1993).

Mitroff and Linstone (1993) illustrated some guidelines when studying the characteristics for each perspective specially the utilization of different method; specifically documentations review and interviews. Since the enterprise architects and stakeholders are interacting within a socio-technical system, the MP three perspectives were considered to understand the different aspects influencing the alignment between them.

Methodology

The researcher used a case study approach as a main strategy to tackle the research questions. In summary, the following reasons are the drivers for using this strategy:

1. The interactions between the enterprise architects and the EA stakeholders are occurred with no control from the researcher and it is essential to explain the process or the practices of this interaction. Moreover, it is important for the study to understand the current challenges and the contextual factors influencing the alignment between the enterprise architects and the stakeholders. The nature of the research is both exploratory (explore the factors) and explanatory (explain the challenges hindering the alignment process) in nature
2. The use of initial alignment framework that is evolving along the analysis of findings
3. The type of the research question is "How". As explained by Yin (2009), it is recommended the use of case study approach when such question is raised

Researchers developed initial conceptual framework to provide some focus on the research problem and provides some guidance in later research stages.

The researcher used the theoretical framework in developing the initial coding cycle themes as part of data analysis. However, the researcher used open-ended questions during interview sessions and performed the data collection inductively.

Government Architecture Framework (real framework name is hidden for anonymity) is selected to be the case study of the research. It is the architecture framework developed for all X (real name of country is hidden for anonymity) government agencies and driven by Information Technology Authority (ITA). Government Architecture Framework project is considered as the main research case study for the following reasons:

1. The suitability of the case to address the research questions (Q1 to Q4)
2. Uniqueness of the case as it covers the governmental sector in X
3. ITA along with targeted participants from ministries showed interest and agreed to participate in the study
4. Geographical nearness and accessibility of case participants

The researcher utilized interviews and documentation review as main sources of data which are common instruments in the case study approach. The case data collection initially started by preliminary study that aimed to get initial insights about the case study, its main actors and validate case study design. Then, it was followed by main case study phase as depicted in Figure 1.

Research Operational Framework

The research consists of seven main phases as shown in Figure 1. Phase 1, phase 2, phase 3 and phase 4 are completed and drafted. The work currently is in progress at phase 5. The details of each phase with the completion plan are discussed below.

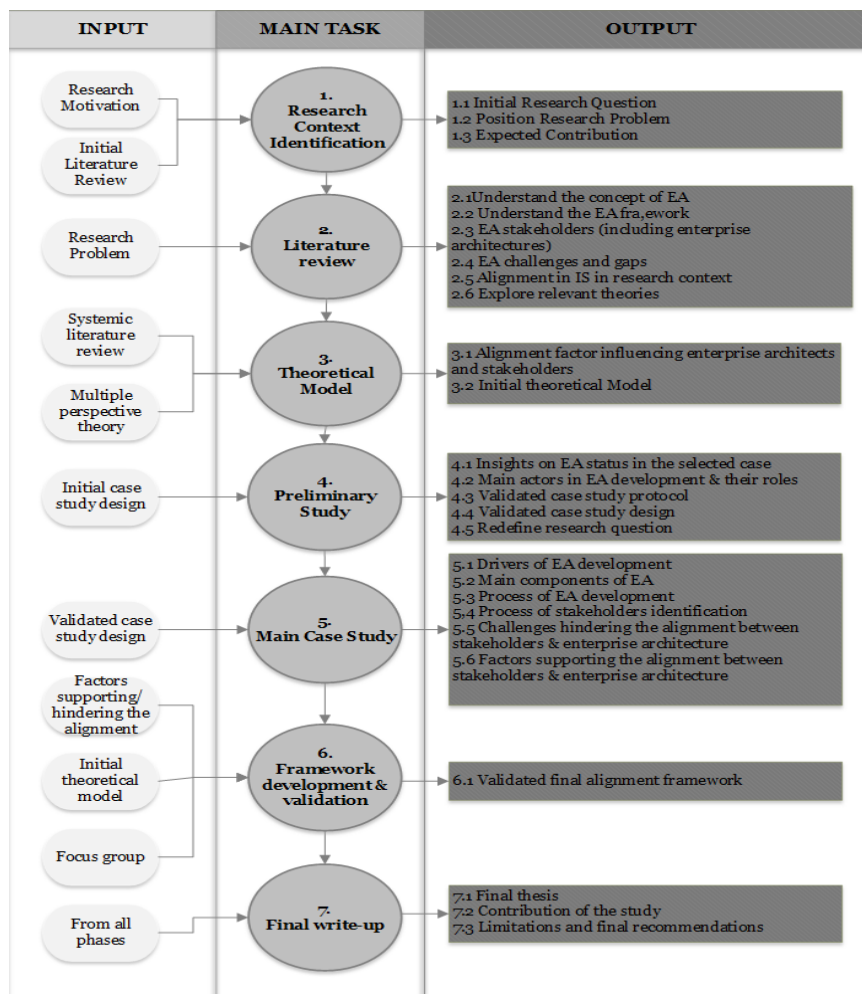


Figure 1: Research operational framework

Phase 1 (Research context identification)

The purpose of phase1 is to identify the scope and the context of the research. The main motivation of the study was the high failure percentage of EA adoption. Through mining into the details of academic literature and practitioner reports, the researcher decided to tackle the issue from enterprise architects and stakeholder because it was confirmed by literature that it is playing significant role in the failure of EA. The main input tasks of this phase are research motivation and initial literature review. The main outputs of this phase are initial research questions, research problem and expected research contribution. The main tasks of the phase are completed but it is updated continuously based on findings from different phases.

Phase 2 (Literature review)

Driven by the research problem, the researcher at this phase is developing a holistic understanding about EA then diving deeply to the main pillars of the study EA development, stakeholders (including enterprise architects), alignment, EA challenges and relevant theories suitable for the research context. The activities of this phase are completed but the researcher continuously working to update the literature.

Phase 3 (Theoretical model)

The purpose of this phase is to develop an initial model that provides initial guidance for the researcher as suggested by Miles et al. (2014). The researcher conducted a systematic literature review to identify the factors that influence the alignment between enterprise architects and stakeholders during EA development by exploring EA publications that discussed any aspects related to enterprise architects or stakeholders during the development of EA. Examples of these factors are architecture knowledge, stakeholders' identification, organization culture, etc. These factors were categorized utilizing the understanding of MP theory into technical, organizational and personal domains. This phase is completed and findings were published (Al-Kharusi et al. 2016).

Phase 4 (Preliminary study)

The main inputs of this phase are the initial alignment framework and initial case study design. The case study design is crucial because it provides some guidance for the researcher and ensures the reliability. Hence, the initial case study design components (instrument, initial case study protocol, etc.) need to be validated and tuned to suit the context of the case study. Also, this phase is critical to identify the main actors (enterprise architects and stakeholders) of the case study and their roles to address RQ1. This phase is completed and provided valuable findings for the research by getting insights on the suitability of the case to answer the research questions, identification of the enterprise architects and stakeholders individuals who involved in EA development, refining research questions and overall case study design to make it case oriented.

Phase 5 (Main case study)

This primary phase is targeting to understand the EA development in the selected case and identify the factors supporting or hindering the alignment between enterprise architects and stakeholders in EA development. In this phase semi-structured interviews (with both enterprise architects and stakeholders) and documentation review are used as the main methods for data collection. Interviews transcription, coding and analysis activities are taking place at this phase. Relevant documentations were collected and 15 interviewed were conducted and transcribed. Interviews transcriptions along with documentations were uploaded to Nvivo11 and the coding process is currently in progress. Utilizing the initial framework, the researcher created initial coding schema. However, the researcher is analyzing the data openly and new domain might be created during the coding stage. So the researcher is following a mix of deductive and inductive coding approach.

Phase 6 (Framework development and validation)

This phase has two objectives; one to develop the final framework and second to validate the final framework. This phase is not started yet as the researcher currently is still working on the coding and analysis. The factors obtained from phase 5 along with MP theory will shape the final alignment framework. The researcher will provide detailed description of each factor and also guidance on how to tackle each factor. The trustworthiness activities are started since preliminary study phase following the guidelines of Shenton (2004). Additionally, to ensure rigorous validation of the final framework, the researcher is planning to constitute a focus group from the case enterprise architects to validate the framework because at the end the framework purpose is to provide guidance for the enterprise architects in developing future EA.

Phase 7 (Final Write-up)

This phase is aiming to document and report the final findings of all phases in the final thesis. The process of write-up is started and happening in parallel with rest of phases' activities. That includes the publication of research findings at different stages.

Conclusion

This research is aiming to address the absence of alignment framework that can guide the enterprise architects to align the development of EA with the stakeholders' needs and concerns. The developed framework is contributing towards stakeholders' satisfaction of the developed EA. Hence, it improves the utilization and success chances of EA. The research used the case study approach to capture the different perspectives from both enterprise architects and the stakeholders. Currently, the research is at the analysis of findings stage which will be utilized to develop the final framework.

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