

Assessing Business Architecture Readiness in Organisations

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Abstract: Business architecture lags because no theoretical framework or model have yet been validated or tested. This study empirically tests a business architecture model that was developed to assess readiness of environment. It is interpretivist research in which the case study approach was employed. Qualitative data was collected through the semi-structured technique. Actor-network theory (ANT) was employed to interpret the outcome from testing the readiness assessment model. The findings suggest that the model solidifies foundation for the deployment of EBA and bring benefits to managers and architects. The result is intended to boost the confidence of promoters and organisations in the concept and possibly increase implementation and practice. This research empirically tested a business architecture readiness assessment model in five South African public and private organisations. The test draws on four main variables: readiness usefulness; value add; design and automation; and ease of use. The variables purportedly help to detect technical and non-technical factors that can derail the implementation or practice of business architecture in an organisation.

1 INTRODUCTION

This paper reports empirical test conducted on enterprise business architecture (EBA) model developed by Zondani and Iyamu (2021). The model is aimed at assessing readiness of environment for the deployment of EBA. The model has neither been validated or tested, which is a gap that this study covers. Thus, we began this paper with momentary introduction to the concept of business architecture.

The EBA is a domain of enterprise architecture (EA), which covers the non-technical activities of an organisation (Kim et al., 2013). Other domains of the EA are information, application and technology (Iyamu, 2015). The focus of this study is on EBA, with particular focus on validating its readiness assessment model (Zondani & Iyamu, 2021). AL-Ghamdi and Saleem (2016) explains how the concept of EBA deals more with business processes and modelling than with the technical and technological aspects. The EBA is derived from the business strategy and its mainly concerned with human's resources, business processes and rules (Kitsios & Kamariotou, 2019). Business architecture can be described as a strategic tool that enables organisations, to drive business operations and determinant for information technology (IT), for competitiveness purposes. These facets, strategic, operationalisation and process model are attributed

the reasons why organisations (or enterprises) show interest and emphasis on the concept.

Furthermore, the deliverables of EBA are said to inform the design and development of other architectural domains, which includes information, application and technology. AL-Ghamdi and Saleem (2016) argued that even though EBA focus is on business process, it eventually gets incorporated with the technical infrastructure, data architecture, hardware and software of the organisation. Thus, EBA provides a roadmap for aligning business needs with IT infrastructures. This aspect of EBA enacts the fact that business environments should not be studied in isolation but through a context (Gonzales-Lopez & Bustos, 2019). The practice of EBA provides the context that allows for a better understanding, performance, and control of business operations (Gonzales-Lopez & Bustos, 2019). Organisations that have implemented EBA are expected to reap benefits such as strategic alignment, customer-centric focus and faster speed to market (Whittle & Myrick, 2016).

However, many organisations have not been able to implement the concept of EBA. As a result, they lose out on the benefits, which would have fostered their competitiveness. The lack of implementation of the concept can be attributed to two main factors: (1) there are not many cases, which limit references and learning from practice. Consequently, it makes some organisations reluctant in embarking on the process (Hadaya & Gagnon, 2017); and (2) many of the

organisations that have implemented or attempted to implement the concept have failed or fail in realising or articulating the benefits (Gromoff, Bilinkis & Kazantsev, 2017). These factors are because of lack of readiness assessment (Zondani & Iyamu, 2021).

Given the strategic significance of EBA, there has always been a need for assessment, to determine an organisation's readiness for the implementation of the concept. Unfortunately, there seems to be no readiness assessment models tailored for EBA that can be used to guide this process. Many of the assessment models found in literature focus on enterprise architecture (EA) as whole and not on EBA as a domain (Zondani & Iyamu, 2021). A study by Bakar and Kama (2016) developed an enterprise architecture implementation and priority assessment model comprising of 27 assessment criteria. Jahani, Javadein and Jafari (2010) presented a model, based on analysis of 9 factors and 34 indicators to assess organisations readiness when implementing EA. Due to the lack of EBA assessment models, organisations find themselves deploying EBA even when the environment is not fit. Jahani et al. (2010) noted that assessment models are critical as they enable organisations determine to what extent are they ready before practising EA concepts and if not ready to better understand the gaps.

It is not sufficient to merely have an assessment model. The assessment model needs to be validated from theory to practice. According to Iyamu (2019), being theoretical about EA concepts with no practicality provides limited knowledge which is not sufficient to apply architectural concepts in organisations. The validation of models from theory to practice enable organisations to measure value and costs of practising EBA. Otherwise, organisations that are interested in EBA will continue to be challenged with implementation and practice stages (Hussein, Mahrin & Maarop, 2020). This paper presents the result from validation of an assessment model that specifically focus on EBA readiness, developed by Zondani and Iyamu (2021).

There are three main, theoretical, empirical and practical contributions from this research. From the theoretical front, demonstrate the significance of readiness assessment model and explain how its capability leads to organisational benefits. From the empirical perspective, we conducted test in 5 South African companies targeting business architects and other senior managers such as Chief technology Officer and Architecture managers. Extracts from the transcripts enhance the validity of the model. Finally, from a practical angle, we developed model that can be used to assess the readiness of an environment

before embarking on the development and implementation of EBA in an organization. In addition, we provide business and IT managers with evidence from the test, which will lead the managers to realistic opportunities for organisational benefits.

This paper is structured into six main sections, sequentially. The first section introduces the paper. The section that follows presents a review of literature, which tries to unpack the gap that exist in the terrain that this study focuses upon. Next, the methodology that was applied in the study is discussed. Analysis and findings from the validation are presented in the fifth section, thereafter, a conclusion is drawn in the last section.

2 LITERATURE REVIEW

Enterprise Business Architecture (EBA) is a domain of the enterprise architecture (EA), which focuses on business design, processes, artefacts, and requirements (Iyamu, 2021). It is believed that organisation that deploys EA have competitive edge through consolidation of artefacts and process, to reduce cost and increases time to market, improves business environment agility (Ross et al., 2006), and foster IT-business alignment (Shaanika & Iyamu, 2018). These premises have contributed to the increasing interest in EBA, over the years.

The EBA is known to be a foundational domain that direct, guide and integrate all the architectures of the enterprise (Whittle & Myrick, 2016). According to AL-Ghamdi and Saleem (2016), EBA is the central domain from which other architectural domains are derived from and can be traced back. Significantly, this means that the EBA provides measurement value and benchmark for other domains. EBA is a strategic approach that is responsible for products and services development and business competition. In corroboration, EBA enacts processes and other architectural elements (Iyamu et al., 2016), and integrates disparate concepts of an organisation (Chew & Dehbokry, 2014). Thus, EBA holistically covers organisation's business processes, activities and events (Gonzales-Lopez & Bustos, 2019).

Despite the importance of EBA, the practice of the concept continues to be challenging for many organisations (Zondani & Iyamu, 2021). Some organisations encounter challenges across in the different stages, such as design, development, implementation, and post-implementation. Also, the challenges encountered are not purely technical, they include non-technical factors such as culture,

administrative, and process (Shaanika & Iyamu, 2018). In their study, Chew and Dehbokry (2014) revealed that the deployment of EBA is challenging due to the limitations of frameworks that are specific to EBA, and difficult to customise to an environment. Thus, the practise of EBA by organisations remains slow. This challenges manifest from lack of assessment of organisations' readiness (Zondani & Iyamu, 2021).

Readiness is critical before embarking on the implementation of EBA. The readiness assessment determines the implementation success factors, which appropriateness of requirements and environmental attributes, which influence practices (Hussein et al. 2020). Assessment for readiness is purposely to ascertain the possibility of implementing an innovation in an environment. Although Yusif et al. (2017) argue that readiness assessment is about taking stock of relevant factors that can potentially influence implementation. Pirola et al. (2020) explain the criticality of readiness assessment in identifying and resolving potential barriers in an implementation. The main challenges are that these factors are not empirically known, other than theorising them (Zondani & Iyamu, 2021).

3 ACTOR-NETWORK THEORY: TRANSATION

Actor-network theory (ANT) is a sociotechnical theory that focuses on constantly shifting negotiation between actors and within networks (Callon, 1986). In ANT, human and non-human are referred to as actors (Callon, 1986), together, they form a network of allied interest (Iyamu & Mgudlwa, 2018). The idea to form alliance is seen as a solution to a problem, such as embracing an innovation in an environment. Based on its multiplicity, ANT is an influential of science and technology, within which the theory is used to embrace devices and other non-human entities. One of the strengths of ANT is translation (Law, 1992).

Translation builds and changes networks (Callon, 1986). It involves the process of reinterpreting interests (goals, problems, solutions) for other actors to align to form alliance (Law, 1992). During this process, the focal actor assigns roles and mobilises others to enrol in the network (Vickers, Moore & Vickers, 2018). This was critical for this study because of the exotic identities of entities and differentiation of cultures across organisations.

In the scheme of things, translation improve understanding of original text. It is within this context that Felski (2016) refers to translation as a vital mechanism in the creation of transnational networks of influence for enablers of texts. Also, innovations are the outcome of negotiations as actors attempt to extend their networks whilst maintaining the complex relationship that exists during the process of translation. Thus, some enablers employ translation as a source of power in their practices, to explain texts for implementation purposes. From ANT perspective, the concept of translation was employed as a lens. Thus, translation is a key metaphor in ways of thinking and making sense of the application of the readiness model in an organisation. This helps to contact heads of department (units) to assist in translating the model to their teams' members, for evaluation and validation purposes. This is where the negotiation begins to shift until the evaluation and validation of the model was complete.

4 METHODOLOGY

Models can be validated through quantitative and qualitative approaches. The qualitative method was employed in the study because of its focus on quality rather quantity (Conboy, Fitzgerald & Mathiassen, 2012). Thus, the method was most appropriate because, the aim to test the EBA-RAM was beyond a 'yes' or 'no'; 'true' or 'false' type of event. The method is well documented, rationalised and is increasingly being used in information systems (IS) research. It therefore does not necessarily need introduction and explanation in the IS context – see Markus and Lee (1999); and Gehman et al. (2018). The method applied in this study primarily because the objective deters knowing insights in the rationalities of the participants.

Given the aim of this study to validate (test) the theoretical model by Zondani and Iyamu (2021), the case study approach is suitable. A total of five South African-based organisations partakes in the testing of the EBA-RAM. A preliminary question (can the EBA-RAM be applied in your organisation?) was used in selecting organisations for the study. The answer was 'Yes'. This question was accompanied by with an abstract and the synopsis of the EBA-RAM. The organisations were selected according to a set of empirical criteria thought to be most useful to the objective of the study (Yin, 2017). These are: (1) thirteen organisations were invited, eight agreed to partake; and (2) of the eight, five have successfully implemented the business architecture. The five

organisations were assigned pseudo names because the organisations (except the government

Four factors were employed in testing (validating) the model in the organisations. The factors were abstractions from literature in conjunction with the objective of the model being validated: (1) The usefulness of the model for the organisation's purposes; (2) The application of the model for business goal and objectives; (3) Friendliness of the model to the users in the organisation; and (4) The value the model can purportedly add to the organisation. A key observation from validation exercise is that there are four key functional areas where the business architect adds unique value in practice (Hendrickx et al., 2011). To validate the model, a theoretical construct, determinant factors were abstracted. According to Molla, Cooper and Pittayachawan (2009), such factors are convergent to successful implementation. Peppard and Ward (2004) suggest that business values are derived through changes and innovations.

The organisations spent average of three weeks applying the EBA-RAM in their environments. Written feedback from each of the organisation was received. Followed-up interviews were conducted with the lead-participants, to clarify and confirmation of responses. Boudreau, Gefen and Straub (2001) argue that confirmatory approach heightens reliability and validity of the content. The transcript of the interviews and the written feedback were combined, and sent back to each of the organisations, also via the lead-participants for verification and confirmation purpose. The authors, Zondani and

administration) strongly opposed to disclosure of identity.

Iyamu (2021) provided procedure for applying the EBA-RAM.

The data was analysed through hermeneutics following the interpretivist approach. The analysis was guided by the concept of translation from ANT perspective. This allowed a two-phase approach. Phase 1: the written feedbacks were repeatedly read in conjunction with the interviews' transcripts to comprehend how the EBA-RAM was applied. According to Eisenhardt (1989), this is crucial in the analysis of qualitative data; and (2) the sets of data from each of the organisations were also repeatedly read with the EBA-RAM, to gain an understanding of conclusions that were reached in the application (testing) of the model. ANT is used in the analysis of the result from the testing.

ANT has been embraced and critiqued over the years (Walsham, 1997), yet it remains a useful lens of inquiring (Iyamu, 2015). We relied on the concept of translation from 3 main standpoints, which are: (1) to broaden the logic of the EBA-RAM, to the understanding of employees in the organisations; (2) its translation is a means through which relationship between actors are established, and understandings are connected; and (3) it helps actions to be coordinated, and meanings are transmitted (Felski, 2016). In addition, ANT was employed primarily because it provides a framework that enables the analysis of social construct including the interaction and relationship of actors in a dynamic fashion (Burga & Rezania, 2017).

participation and provide useful response. at the second level, the participants translated the components in the context of their organisations, to ensure relevance and fit. Some organisations view business architecture as an interlinked with organizational goal and objectives towards value creation and competitiveness (Roelens, Steenacker & Poels, 2019). Consequently, one of the participants concluded as follows: "The model clearly presents the factors of readiness and also outline the weight associated with these factors" (GASA_02).

Business model design and product design differ in several theoretically meaningful ways. Hence translation of the components was critical. According to one of the participants, "the main value is that it helps to improve the capabilities to achieve the goals and objectives of business architecture. Also, it helps with design, to capture and address all elements related to customers service such as digitisation of its services (OBSA_02)". Unswervingly, the managers (lead participants) established themselves as

5 TRANSLATION OF THE DATA

The key factors or areas are usefulness, value, design and automation, and ease of use. The factors require translation in ascribing them into actors for implementation purposes. Translation exposes the way in which the interests of actors change in the implementation of technology or processes (Heeks & Stanforth, 2015).

5.1 What Was Translated?

Thus, it is the primary role of a business architect to have a holistic understanding of the business direction, context and strategies when developing EBA. There are multiple levels of translation in the process of testing the model in the organisations. First level, the components of the model were translated to the participants. This was to help them decide on their

obligatory passage points by directly enforcing testing of the model. such action ensures common understanding among participating employees, which helps with corroboration of responses from the employees. In addition, some of the managers used the study as an opportunity to test employees' theoretical know-how about the concept of business architecture which they have inscribed in them as the organisations' embarked of the route to developing the business. From the Responses and actions, some of the managers translated employees' buy-in into indispensable interest.

5.2 Why and How Translation Happen

The readiness assessment helps an organisation to understand its resources capacity towards improvement of the mandatory requirements for successful implementation of EBA. Hussein et al. (2020) consider readiness assessment as the first step for adopting as it can be usefully in identifying gaps and risks. In successfully implementing business architecture, a method that detects and traces means and ends at the domain's level was needed. One of the participants briefly explain: "The value stream allows an organisation to document its processes and procedures, create and improve business objectives" (OBSA_05). The business architecture involves the conceptualization of organizational boundaries and defines design flows of processes (Amit & Zott, 2015). Through translation, the assessment model is understood as "useful because it helps the organisation to deliver end-to-end business value to its customer" (ARSA_03).

Organizations must be able to assimilate change, for purposes of value add and realisation. "The model is useful in that it helps in the overall assessment of enterprise-wide business architecture model, more so in the identification key areas when gathering requirements" (SBSA_03). The factors used for testing makes the model suitable for assessment of an environment toward readiness of EBA. The factors are fundamental for both present and future including potential changes. Peppard and Ward (2004) argue that environment evolve to a point where change emerge, which therefore mechanisms for assessment. The position of the participants was that the assessment "... helps a great deal as a guiding plan when building the matrix to assess EBA maturity level" (GISA_01).

5.3 Where and When Translation Occur

During test, translation occurred at stages that further allows us to analyse the proliferation of related networks (groups within organisations), to gain explicit fathom on why and how the EBA RAM was evaluated and accepted as readiness assessment mechanism in organisations: "the EBA model designed to help organisations build a better visual representation of their business environment" (SBSA_02); "The model is useful because it helps an organisation to capture and futuristically assess how business activities fit together, to serve the end-to-end stakeholders' needs" (ARSA_02).

The readiness assessment helps an organisation to identify various factors that can impede successful operationalisation of the business architecture. The factors are both technical and non-technical and can be unique for each organisation. "The model is well constructed, and it is easy to interpret and used" (GASA_04). As a result, "it further helped on establishing the gaps on the current departmental enterprise architecture effort" (OBSA_02). Pirola et al. (2020) argue that by conducting EBA readiness assessment, organisations do not only identify the risks and potential challenges but also opportunities that might arise when EBA is implemented.

Fundamentally, translation reduces cognitive biases and strengthen the proposition to gain understanding of how the model can improve the stability, usefulness and value of business architecture. "In my view the model is useful because it provides better business definition for every area of business architecture deployment which can lead to effective and efficient business processes and technology solutions within the environment" (SBSA_01). Assessment requires reconciling means with ends through translation in which change is ascribed in the actors within the environment. Consequently, actors prepare for known and unpredictable change that relate to both ends and the means. "The model allow organisation to build business capability which can add value to the development and implementation of the business architecture" (OBSA_03).

6 DISCUSSION OF TEST RESULT

The EBA has been better theorised in literature rather practice (Kotusev, 2019). This study provides empirically validated model for organisational

practice. Testing of the model provides practicable evidence for implementing EBA in organisations. The test focused on four fundamental factors, which are usefulness, value add, design and automation, and ease of use as shown in Table 1. Typically, these factors are indicators for IT and business improvement, risk mitigation (Amit & Zott, 2015), and alignment (or co-existence) with existing IT solutions (Öri, 2014). The factors enact structures, operations, governance, and alignment of the EBA with the current environment. The EBA-RAM implies realistic construction of structures and operationalisation of alignment and translation of strategies toward implementation of the EBA in an organisation. The factors are discussed below, and they should be read with the Table 1, to gain a deeper understanding of their criticality.

Table 1: Test result of the EBA-RAM.

#	Org.	Factor	Weight				
			1	2	3	4	5
1	SBSA	Usefulness					X
		Value adds					X
		Design and automation					X
		Ease of use				X	
2	OBSA	Usefulness					X
		Value adds				X	
		Design and automation				X	
		Ease of use				X	
3	GISA	Usefulness				X	
		Value adds				X	
		Design and automation					X
		Ease of use					X
4	GASA	Usefulness			X		
		Value adds			X		
		Design and automation		X			
		Ease of use				X	
5	ARSA	Usefulness					X
		Value adds				X	
		Design and automation				X	
		Ease of use					X

This notions of usefulness, value, design and automation and ease of use were prevalence in the conversation and written responses from the participants. These were because of translation of the business architecture goal and objectives. “The model also allows the measurement and monitoring of the key performance indicators within the environment” (SBSA_02).

6.1 Usefulness of the Assessment Model

An object or system is deemed useful when it enhances the performance of activities towards achievement of defined goals. Individuals accept and use systems to the extent they are better at addressing their needs. The EBA-RAM was considered useful by enforcing practicality in assessing organisations readiness for business architecture implementation. Also, because it helps to fortify implicit decisions in business processes, towards achieving the goals and objectives. Thus, determining areas of an organization for the EBA focuses, to improve performance. The absence of this type of model has made difficult for many organisations to understand the extent of complexity of their and the readiness nature of their environments. In addition, the usefulness of the model also comes from its generalization because it is not designed for a specific organisation as it is flexible and can be applied by different organisations wishing to implement the concept of business architecture.

The model is useful in providing guidance to both business and technology managers in assessing environment to detect factors of influence in the deployment of EBA. Roelens et al. (2019) argue that the realisation of strategic fit within the business architecture is an important challenge for many organizations, which has not been actualised. The test conducted in the 5 organisations proceed the model from a theoretical antecedent into practice. Significantly, the model illustrates how to carry out the assessment process. The model, through the weight associated with each cell provides a valid reflection about the current business environment, enabling the identification of the existing gaps and the analysis of the efforts towards each factor. Also, it enables detects potential risks in business architecture’ multi-faceted view of the organization’s key components. The test validates the gap between an organization’s blueprint and the real-world readiness and capabilities required to deliver EBA.

6.2 Value Adds to EBA Development

Lack of understanding of factors that influence the deployment contributes to inability to assess the value of business architecture in organizations (Zondani & Iyamu, 2021). Significantly, this is one of the contributions of the EBA-RAM to organisations in their pursuit of developing and implementing business architecture. The EBA-RAM brings a fresh perspective to organisations that enables management and employees to scrutinise their environments for

readiness before committing to architecture activities. Thus, the business architecture is considered the genesis domain of the enterprise architecture because it is pivotal to value add. Also, the EBA-RAM can be viewed as a communication tool through which alignment of the various components necessary for successful operation of EA is achieved. This addresses concern that demonstrating the business value of architecture has proven elusive as many of the benefits are intangible (Shanks et al., 2018).

The result from the test clearly shows that the EBA-RAM is resilient and adaptive to business architecture in organisations. Hendrickx et al. (2011) explain how business architecture resolves historical challenges in organisations and translates objectives into strategies, thereby aligning technology and operations. This can hardly be achieved without an assessment, a significant value which the EBA-RAM presents. From value aspect, the EBA-RAM clearly addresses the gap in processes, designs, and communication within business units, which can be used to promote quality of business' functionalities and supports. The value is fortified through its provision of managerial approach to reveal reality about current state and guides processes toward performance improvement. Consequently, the approach removes the incessant of going in virtual circles, without valuable contribution.

6.3 Design and Automation of Processes

The implementation of EBA-RAM is influenced by various factors that are of technical and non-technical nature, which manifest from characteristics and categorisations. There are challenges of characteristics, constraints, and categorization of resources, which often hinder the implementation or practice of business architecture in organisations. Without initial assessment, it is difficult to detect some of these factors because of their uniqueness. The uniqueness of the factors requires a deep view, to gain better understanding and their impacts toward successful development and implementation of the business architecture. This is critical as it shapes the business process network and automation. Also, it enables management to develop a holistic view of an organisation's resources necessary for the design and development of business goal and objectives.

In theory, business architecture defines fundamental components such as transformation and strategy (Hendrickx et al., 2011). Through its design, workflow, and logical artefacts, enables alignment, an integrated bridge between business units and IT

(Kotusev, 2019). Therefore, its assessment should not be taken for granted in actualisation for the objectives. Also, the increasing complexity in business processes and operations require fixing and manageability, to promote cohesion and business-IT alignment (Řepa & Svatoš, 2020). The factors that influence these aspects can be detected at the readiness stage, to ensure stability and increase the chance of fulfilling the objectives for value purposes.

6.4 Ease of Use of the Assessment Model

In addition to other valuable components, the EBA-RAM is considered ease of use focus when performing an assessment in an environment. Davis (1989) argues that when a system is perceived as ease of use, there is high possibility that the users will continue to make use of the system. This is important for the EBA-RAM, in assessing readiness of an environment and enhancing the model as technology and business evolve. The EBA-RAM's ease of use is attributed to it making complex environment look simply, to understand design. The comprehensive description of each cell in the model enhances employees' understanding of factors.

Organisations in all industries operates in dynamic environments. The constantly changing environments affects the business and IT structures make some environment complex. Rakgoale and Mentz (2015) explained that IT-landscapes continues to be a challenge due to the constantly changing requirements and globalisation. These add to complex environment why numerous research that have been conducted in the areas of business architecture do not aim to assess implementation gaps (Gromoff, Bilinkis & Kazantsev, 2017). Implementation of the EBA has been slow primarily because many organisations do not have a clear understanding of how to transform from it being a concept to practice. Also, it is difficult to demonstrate and quantify the value of EBA changes without able to detect the risks and the bridging mechanism. The EBA-RAM is an easy-to-use approach that supports business model-driven migration from a baseline to the deployment of EBA.

7 CONCLUSION

The business model concept has rich theoretical roots. The theoretical contribution of the paper is the validation of the model, which connects findings from earlier literature and identifies new insights.

From practice front, the core stakeholders (architects, IT managers, business managers and project sponsors) now have a pragmatic tool for decreasing uncertainty prior and during implementation of the EBA in their organisations.

Through ANT's translation concept, we provide the analysis of the outcome from evaluation of an assessment model for EBA, by examining the alliances in the process. The concept of translation helps to reveal relationship and rationality, based on which we propose a construct that extends previous research on how EBA can be deployed for value purposes. Applying ANT in the study therefore contribute to the evolving nature of the theory.

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