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On the Yellow Brick Road, A Path to Enterprise Architecture Maturity

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ABSTRACT

This study concentrated on the relationship between the Enterprise Architecture (EA) maturity of an organization and the business value associated with it in the South African financial services environment. It was developed within the critical realism philosophy, which states that mechanisms generate events by accentuating the underlying EA mechanisms that lead to business value, as well as provide insights into the opportunities and challenges organizations experienced as they progressed to higher levels of maturity. Constructed using the resource-based view of the firm as the underlying theoretical framework, this research examined EA as an intangible resource and maturity as a source of heterogeneity. This research also examined the practices of business units at evolving levels of maturity and the forms of business value attainable at those levels. Further, this study demonstrated that EA is a source of both tangible and intangible forms of value.

Keywords

Enterprise architecture, Maturity, Business Value, Resource Based View, RBV, Critical realism, Qualitative

INTRODUCTION

After a tornado ripped through Kansas, Dorothy appeared in the land of Oz. She walked the yellow brick road accompanied by a scarecrow without a brain, a tin man without a heart, and a lion in need of courage. They searched for a magical wizard, whom they believed could solve their problems by giving them the missing brain, heart, and courage (Fleming et al. 1939). What does this classic movie have to do with enterprise architecture (EA)? It can serve as an effective metaphor for understanding the

different EA capabilities that influence business value for organizations as they progress towards higher levels of maturity. Challenges exist in understanding the relationship between EA practices and business value as there is limited research that examines EA as an intangible resource and basis for business value (Kaisler and Armour 2017; Tamm et al. 2015). Studies have not specifically focused on the way that EA affects business value outcomes at different maturity levels (Bui 2012; Tamm et al. 2015; Vallerand et al. 2017). This problem is further compounded by inconsistencies in the definition of the term business value (Cronk and Fitzgerald 1999) as organizations use different definitions and have multiple interpretations of value (Keyes-Pearce 2005). Investigating this problem is important as it enable organizations can understand the forms of business value that could be attained as they progress towards higher levels of EA maturity (Bui 2012; Tamm et al. 2015; Vallerand et al. 2017). Specifically, the aim of this research was to understand the relationship between the EA practices of an organisation and the business value associated with it in the South African financial services environment. The following section presents a background to the study.

BACKGROUND

Over the last decade, the landscape of business and information technology (IT) has evolved extensively (Dutta et al. 2015; Santana et al. 2016). Organizations operate in a complex and highly dynamic environment, driven by technological advances, disruptive innovations, regulatory changes, and globalization (Panetto et al. 2016; Walker et al. 2016). Literature demonstrates the rapid acceptance of EA within the major sectors of the economy (Niemi and Pekkola 2016; Vallerand et al. 2017). It has progressed from reactive once-off initiatives into a growing structured field (Bernard 2012; Van Steenbergen and Brinkkemper 2009).

EA is defined as the practice of designing, planning, implementing, and governing business, application, information and technology domains within an organized structure, using granularities, layers and views (Chen et al. 2008; Harrison 2013; Schekkerman 2011). As a formal discipline, this practice is less than 30 years old (Lapalme et al. 2016; Silva et al. 2017). John Zachman introduced the concept in the 1980s when he observed similarities in the construction process of buildings and airplanes (Bernard 2012; Bui 2012).

EA is viewed as a source of business value and competitiveness by researchers and organizations (Kaisler and Armour 2017; Ross et al. 2006). Studies show several empirical benefits of EA to organizations. EA is an instrument that can reduce system complexity (Lankhorst 2013; Lumor et al. 2016; Rouhani et al. 2015), achieve business-IT alignment (Bricknall et al. 2006; Pereira and Sousa 2005), improve system integration (Boh and Yellin 2007; Venkatesh et al. 2007), enhance IT management and strategic competitiveness (Bernard and Grasso 2009; Kappelman 2010) and assist stakeholders in visualizing design (Cardwell 2008). These benefits illustrate the value and growing relevance of EA to organizations (Foorthuis et al. 2016).

THEORITICAL FRAMING

The resource-based view (RBV) (Barney 1991; Rothaermel 2015; Wernerfelt 1984) takes an “inside out” perspective (Madhani 2009, p. 4), and focuses on an organization’s creation, development and choice of internal resources to create business value (Connor 2002; Ludwig and Pemberton 2011). The dynamic capabilities theory (Douma and Schreuder 2013; Ludwig and Pemberton 2011) takes an “outside-in” (Teece et al. 1997, p. 526) perspective, and focuses on an organization’s ability to “reconfigure resources” (Bowman and Ambrosini 2010, p. 30) to address rapidly changing environments and industry forces (Teece et al. 1997). However, this theory has been criticized for lacking a clear, broadly accepted definition (Kitenga and Kuria 2014; Williamson 2016). It has also been criticized for

its lack of theoretical foundations and poor empirical support (Easterby-Smith et al. 2009; Williamson 2016) as well as its complex and disconnected body of research (Barreto 2010).

RBV was selected as the underlying theoretical framework for this study, owing to its support of the research objectives, as it helped explain the way that EA practices influence the business value of an organization (Amit and Schoemaker 1993; Burton and Rycroft-Malone 2014; Seddon 2014). RBV states that organizations should look inside their environment for *tangible* and *intangible* sources of value (Barney 1991; Rothaermel 2015; Wernerfelt 1984). Tangible resources are physical assets that are a source of short term value, and can be easily purchased in the open market (Barney 1991; Bergvall-Kåreborn et al. 2009; Schöenherr 2009). Intangible resources have no physical presence, cannot be easily purchased, and are the primary source of long term business value (Wade and Hulland 2004). Heterogeneity assumes that the intangible resources of organizations differ from each other and provide long term business value (Barney 1991; Patas et al. 2012).

This study extends RBV as it examines EA as an intangible resource (Boh and Yellin 2007; Ross et al. 2006; Tamm et al. 2011) and the maturity of EA as a source of heterogeneity (Anderson and Eshima 2013; Helfat and Peteraf 2003; López 2005). This understanding is important because competitors cannot easily imitate intangible resources due to heterogeneity because they are difficult for competing organizations to copy (Barney 1991; Li 2009; Rothaermel 2015).

RBV is regarded as one of the most influential and cited management theory frameworks (Kraaijenbrink et al. 2010) as it supports organizations to them better understand their internal resources (Connor 2002), which gives them the ability to innovate and envisage products that “customers need but have not yet even imagined” (Prahalad and Hamel 1990, p. 6). Despite these benefits, this framework is criticized as it is based on a static environment and not aligned with business reality (Ludwig and Pemberton 2011). RBV operationalization is an area of debate amongst scholars (Barney 1991; Connor 2002; Priem and Butler 2001). Researchers argue that RBV does not provide mechanisms for operationalization (Bromiley and Fleming 2002; Hoopes et al. 2003). Literature suggests the use of “supporting” theory to overcome the challenges of operationalizing RBV (Lockett and Thompson 2001, p. 741). Hence, researchers supplement RBV with other theoretical frameworks to operationalize and understand the way resources influence value and outcomes (Peteraf and Barney 2003). The Architecture Capability Maturity Model (ACMM) (De Carvalho et al. 2016) was selected as a maturity model reference for this study as it identifies levels of maturity and contains appropriate mechanisms comprising of processes, communication, business IT alignment, senior management involvement, and finance that are relevant to this study to evaluate EA practices and operationalize RBV (De Carvalho et al. 2016). The level of maturity was determined by evaluating and judging these practices, as described by the participants from this study against the ACMM levels (Fraser et al. 2017; Mirzianov and Mitasiunas 2015).

STATEMENT OF THE PROBLEM

Challenges exist in fully understanding the business value that organizations experience at different EA maturity levels, as literature simply identifies EA as an intangible resource that leads to value (Boh and Yellin 2007; Li 2009; Tamm et al. 2015). There is a lack of research investigating the tangible and intangible forms of value that can be obtained at the different levels of EA maturity (Tamm et al. 2015; Vallerand et al. 2017). This research examined EA as an intangible resource (Boh and Yellin 2007; Li 2009; Tamm et al. 2015) and maturity as a source of heterogeneity (Anderson and Eshima 2013; Helfat and Peteraf 2003; López 2005) from an RBV perspective. It contributes to the RBV theory by examining EA maturity as a basis for business value (Boh and Yellin 2007; Li 2009; Tamm et al. 2015).

Similar EA maturity studies (notably using different theoretical frameworks and methodologies) have produced disparate results. A study (Bradley et al. 2012) found that EA maturity levels directly influence the effectiveness of an organization's IT resources in achieving strategic goals and indirectly influence the effectiveness of IT resources when IT alignment is incorporated as a mediating variable. Other studies (Khaiata and Zualkernan 2009) found that EA maturity levels influence business and IT alignment. That study, however, still found gaps in strategic business planning, organizational learning, and business processes. Another research article (Venkatesh et al. 2007) found that higher EA maturity produced benefits such as improved integration, standardization, business processes, and operations. These contrasting results show the need to better understand the forms of business value that are attained as organizations progress towards higher levels of EA maturity (Bui 2012; Tamm et al. 2015; Vallerand et al. 2017). The research methodology adopted for this study follows in the subsequent section.

RESEARCH METHODOLOGY

The research philosophy follows important views on how a researcher perceives the world (Saunders et al. 2016). Critical realism helps to understand the EA practices that influence business value and uncover insights to explain the benefits, opportunities, and challenges organizations experienced as they move through higher levels of maturity (Archer et al. 2013; Bhaskar 2015; Burton and Rycroft-Malone 2014).

This research generates meanings from the data and recognizes patterns and relationships to build a middle-range theory. Qualitative data gathering methods comprising of individual interviews and artifacts are selected for this study (Denzin and Lincoln 2011; Mingers et al. 2013; Wynn and Williams 2012). Importantly, the case study strategy is aligned to critical realism and qualitative approaches (Miles et al. 2014; Yin 2013). This cross-sectional study allows stability and comparisons of data at a single point in time (Saunders et al. 2016).

The South African financial services sector has been selected as a setting for this study because of its strong regulatory, compliance, risk and legal frameworks (Fosu 2013; Luiz and Charalambous 2009). The study examines nine business units within three banks of different sizes, complexities, and maturity levels to add to the richness of the study. Bank "A" is listed on eight stock exchanges across Africa and focuses on banking and insurance industries targeting retail, corporate and public-sector customers. The bank, employing approximately 32,000 staff, has assets close to R1 trillion and headline earnings close to R11 billion (Fanta and Makina 2017; SARB 2018). Bank "B" operates across 20 countries in Africa, as well as six countries across Europe and Asia. It provides banking and insurance to retail, commercial, corporate, and public-sector customers. This bank employs approximately 54,000 staff, has assets close to R2 trillion, and headline earnings close to R12 billion (Fanta and Makina 2017; SARB 2018). Bank "C" was established through the merger of several small South African financial service providers and is listed on multiple international stock exchanges. It provides banking and insurance to retail, commercial, corporate, and public-sector customers. The bank employs approximately 35,000 staff, has assets close to R1.5 trillion and headline earnings close to R8 billion (Fanta and Makina 2017; SARB 2018).

Using a purposive sampling approach, 28 individuals representing diverse types of business and IT professionals are interviewed for this research across these banks. Artifacts that support EA maturity and value discussions are analyzed (Collis and Hussey 2013).

Thematic analysis is used to analyze the data, search for patterns, and reveal themes (Braun and Clarke 2008; Terry et al. 2017). Synchronic and inter-judge reliability criteria, as well as instrument, internal and construct validity criteria are adopted for this study (Miles et al. 2014; Yin 2013). Similar patterns found in the data collected from different sources enhance the reliability and validity of the interpretations (Miles et al. 2014; Yin 2013). This study ensured synchronic reliability, the similarity of outcomes observed from multiple sources within a similar period by using a standardized interview protocol and artifact form. These forms were used by multiple participants, after which similar patterns were investigated. Triangulation of the data from different participants contributes to the internal validity of this research (Bhaskar 2015; Bisman 2010; Denzin and Lincoln 2011). All inconsistencies, contradictions, and discrepancies are acknowledged in this study (Bhaskar 1989; Guba 1990; Miles et al. 2014). Notably, this study focuses on the understanding and explanation of this specific case study environment (Dobson et al. 2007; Dobson 1999), as opposed to producing transferable and universal generalizations (Archer et al. 2013; Bhaskar 2015; O’Mahoney and Vincent 2014). A discussion of results follows.

PRESENTATION AND DISCUSSION OF RESULTS

Figure 1 below summarizes the characteristics of the EA practices, as well as the types of value experienced at each level of maturity found in this study.

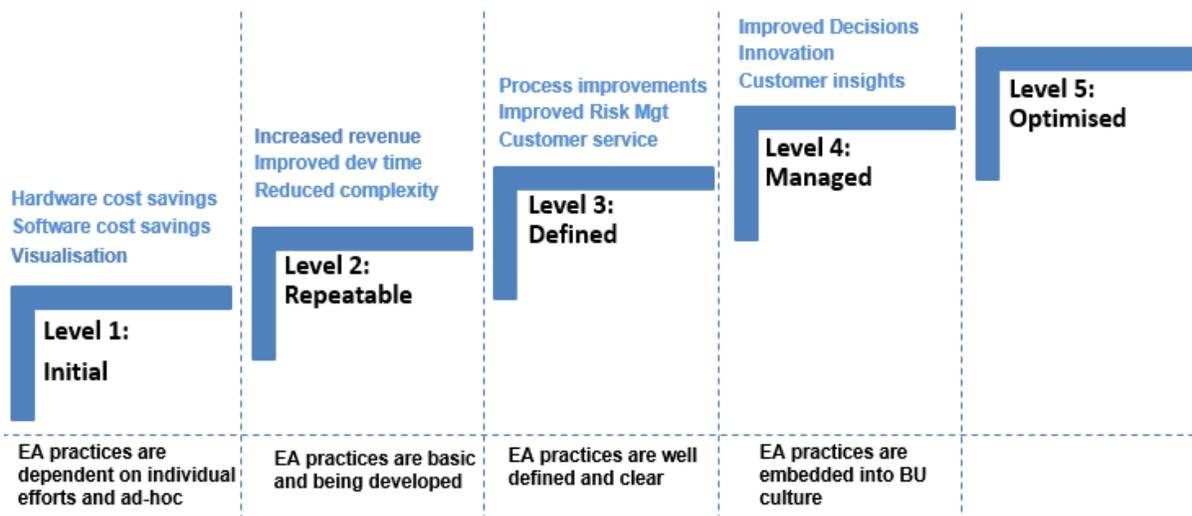


Figure 1. Summary of results

Level 1 - “If you have the courage to begin, you have the courage to succeed.” (Fleming et al. 1939): This research found that at Level 1 maturity, EA practices were characterized as ad hoc, with no unified practices across the various EA domains. Due to a dependency on specific individuals, EA documentation was a combination of high and low-quality artifacts. Business units at this level perceived EA as a tool for the technology department to “draw diagrams” (B.BU2.P5.1) and document their systems. Moreover, there was minimal involvement of senior management with EA. To quote a participant, “It’s up to the architecture team to make a success of the situation.” (C.BU1.P4.1)

Tangible forms of value such as hardware and software cost savings were achievable. This is an important outcome, as organizations taking advantage of EA, even on an ad-hoc basis, have the potential to experience immediate value in the form of these savings. Intangible forms of value such as the visualization of systems were also achieved at this level. A participant revealed that they reviewed the EA catalogues prior to large infrastructure purchases. She cited an example of three different MIS reporting applications, two sales systems, and two bespoke customer relationship systems (CRM) that performed similar functions within the bank. To quote this participant, “We had a patchwork of independent systems... architecture helped identify and eliminate these duplications... this reduced IT spending across the group.” (C.BU1.P4.1) The visibility created by EA blueprints helped improve procurement decisions, assisted with the rationalization of systems and licenses, and afforded horizontal view aspects of business and IT landscapes.

Level 2 - “Now which way do we go?... pardon me, this way is a very nice way.” (Fleming et al. 1939): The majority of business units, totalling four departments fell within a maturity Level 2, indicating that EA practices were still developing within the banks. The EA practices were characterized as basic, with a notably reduced dependency on specific individuals. These business units had simple blueprints as well as standards and principles of their current EA states. However, there was no future or target state architecture in place. Notably, there was alignment between the business and technology departments as the technologies were mapped to the business objectives. To quote a participant, “It is still fairly new with a few holes missing, but still captures this department’s structure in a formal design that supports our evolution and change... it also ensures that our technical designs align with the bank’s business strategic objectives.” (A.BU2.P1.1).

However, business units at this level still perceived EA as a tool for the technology department. Moreover, EA still did not prominently feature within these business units’ strategic agendas. There was selective involvement of EA by senior management, with various degrees of commitment. According to a participant, “The management team since agreed to get more involved with the architectural process... we will see how this evolves as it was only recently agreed and there is still internal squabbling amongst them, however, they all realize that architecture plays a key role in aligning our systems to meet customer needs.” (A.BU2.P3.1) EA communications in these business units have taken place sporadically.

Tangible forms of value such as *increased revenue* were experienced. This was achieved by the quick time to market deployment of new technologically advanced solutions, enabled by the visibility of EA. However, it was found that with time, competitors could procure or build similar technologies, which eventually leveled these benefits in the long term. Tangible forms of value such as improved development time was another benefit experienced. This value was achieved by building an EA repository of reusable components containing standard interfaces. The use of this EA repository enabled each new development task to be completed within a faster time frame than the previous period. Intangible forms of value such as reduced complexity were further attained. EA facilitated simplification through visibility and architectural standards that reduced implementation complexity. According to a participant, “Our complexity has grown over time... we built our systems to do one thing, and they were modified to do things that they were never meant to do... complexities began to emerge as the technologies began to overlap each other... we faced the problem of buying new technologies without decommissioning legacy systems... we eventually ended up with a tangle of overlapping new and old systems that no one really understands and costs us money. Our architecture endeavours have played a role in reducing and managing the complexity chaos for us.” (C.BU3.P3.1)

Level 3 - “Now fly! fly!” (Fleming et al. 1939): The EA practices became more structured within business units from Level 3 onwards. The business units at this level had simple EA practices in place that were well accepted and communicated to the teams. They used EA processes to measure and share outcomes of projects to the staff. These outcomes were further used in post-implementation reviews and staff performance reviews. EA documentation at this level was comprehensive and importantly contained future target environments of the business unit. These target environments were typically three year-end state visions of the business unit. Interestingly, business units at this level of maturity level incorporated their EA practices into strategic planning by creating a link between EA and key projects. A participant said, “The architectural practices are entrenched into the project prioritization forums, can’t be treated as a separate function.” (C.BU2.P1.1) This essentially forced formal engagement between IT and business departments. By creating this link between EA and key projects, the business units were continually reminded of its importance.

Furthermore, as business units moved up the maturity curve to Level 3, a more prominent transition from tangible to intangible forms of value took place. This study found that EA aided business units with process improvements by helping them visualize and understand the complex interconnections between processes that were confusing or conflicting. Another intangible form of value experienced at this level was improved risk management. Business units cited stringent legislative compliance regulations within the financial services sector, as well as frequent amendments to these regulations. EA created value by addressing various risk regulations in a holistic manner, creating common structures and synergy, while still meeting the individual regulatory compliance needs. Further intangible forms of value such as improved customer service started to become prominent at this level. Business units found EA beneficial in mapping their customer journeys across the individual departments by collaborating and sharing customer experiences and identifying service problems that emerged at the handoff points between the business silos.

Level 4 - “You have plenty of courage, answered Oz.” (Fleming et al. 1939): The one business unit at maturity Level 4 had a wider perspective of EA, as they viewed it as a practice, that involved applying a set of tools and techniques to solve business problems. EA was entrenched in the business decision-making process. To quote a participant, “EA (is) integrated into our strategy and core business activities.” (A.BU1.P4.1) Another participant said, “To get our architecture to this level was not a once off event... it required care... it is bigger than a single event... we had to invest in it to make it sustainable... incorporate it into our day to day operations.” (A.BU1.P5.1).

This study showed strong business-IT alignment practices with technical teams aligning their priorities to their business objectives at higher levels of maturity. This business unit used metrics such as Delphi techniques, frequency analysis and the percentage of reuse of common designs that specifically measured aspects of EA. This business unit kept its EA documentation updated by reflecting the latest architectures that were in their production environments. Interestingly, these business units developed common reference models for them to comply with. Notably, senior management was actively involved with EA reviews and enhancements. To quote a participant, “Manco (management committee) is part of the architecture review board.” (A.BU1.P1.1)

Level 4 maturity experienced intangible forms of value such as improved decision making. EA presented a consolidated, integrated view of large and complex business unit data in an understandable and easily comprehensible format. The blueprints and diagrams generated by EA assisted these business units to visualize and identify patterns in this data that subsequently helped them make better decisions.

EA enabled innovation by assisting with the rapid implementation of new ideas. It assisted the business unit to understand the potential impact of change brought about by innovation. Level 4 maturity further experienced intangible forms of value such as enhanced customer insights. According to a participant, “A few years ago, a customer walked into a branch and took out a personal loan... we did a credit check, and the transaction was simply processed... these days, it goes beyond that transaction... we look at things such as Tweets and Facebook comments to check for any cross-sale opportunities... the key is offering the right product at the right place and at the right time, tailored for that specific customer.” (A.BU1.P3.1). EA enabled the business unit to create tailored offerings of products that directly targeted customer-specific needs. EA structures further helped gain insights by connecting disparate data silos to create a single, integrated view of a customer.

Level 5 - “Toto, I’ve got a feeling we are not in Kansas anymore. We must be over the rainbow.” (Fleming et al. 1939): None of the business units operated at an optimized level, indicating that although all the business units had invested in EA to some degree, more momentum was required to reach the top level of maturity. To move to level 5, the business units needed to further improve focus on continuous improvement, so that the impact of new EA practices could be predicted and effectively implemented when required.

INSIGHTS INTO KEY FINDINGS

This study revealed thought-provoking insights. First, all the business units assessed in this study were making advancements with their EA practices and viewed it as an ongoing priority. It revealed a wide range of EA maturity levels across business units in the banks. This study established that organizations seeking to improve their EA maturity should focus efforts on refining EA processes, communications, business-IT alignment, senior management involvement, and financial practices. The characteristics of these EA mechanisms influenced the level of EA maturity.

This study found that business units at lower maturity levels often had a dependency on specific individuals. Although forms of value such as cost savings were experienced, they were erratic and inconsistent due to this dependency. As business units moved up the maturity curve, the benefits became more repeatable because of the reduced dependency on individual efforts. The EA champions were influential in helping business units move up the maturity curve. These champions collaborated with business stakeholders and positioned EA as a joint business-IT venture. They collaborated with senior management and junior staff on EA efforts and aggressively communicated its value to the organization.

Business units at Levels 1 and 2 maturities, had large diversified portfolios of different programming languages, technology infrastructure, and toolsets. This contrasts with business units at Levels 3 and 4 that had implemented standard programming languages and consistent technology infrastructure stacks across a variety of applications. They used standardized off-the-shelf packaged technologies with minimal or no customization. The use of standardized technologies prevented future interface complexity.

This study found that the availability of skilled resources was a major challenge to EA success. At lower levels of maturity, individuals were not formally appointed as architects but were primarily senior developers within their respective business units. Furthermore, business units at lower levels of maturity did not recognize or fully acknowledge EA as a formal career. Conversely, business units at Levels 3 and 4 acknowledged this career path, and built strong internal skills by sponsoring and encouraging EA

training. They recognized EA as a professional career path with formal roles and responsibilities. These business units had positioned architects at a higher level of seniority with more decision-making power.

Business units at lower maturity levels perceived EA as a blueprint, as well as an independent technology decision. This view contrasted with the business unit at Level 4 maturity that viewed EA as a practice, involving applying a set of tools and techniques to solve business problems. Furthermore, the business unit at Level 4 had intentionally structured EA to target critical business projects. This ensured that it remained visible and relevant to the business unit due to its association with the benefits created by the critical projects. This is a lesson for lower maturity level business units wanting to gain momentum in their EA efforts.

An unexpected finding from this research was insights into the types of metrics that business units utilize at various levels of maturity. This study found that business units between Levels 1 and 3 maturity utilized financial metrics, customer metrics, process metrics, and compliance metrics. However, the differentiator at Level 4 was the use of statistical metrics specifically designed to measure EA. This business unit used Delphi techniques to enhance EA decision making, frequency analysis to determine patterns for EA improvement, and measured the number of projects that leveraged the EA repository for target state designs, the percentage of projects architecturally aligned to the target state, and the percentage reuse of architectural components.

This study found that the forms of value realized from EA was relative to the maturity level of a business unit. This outcome is supported in the literature, where researchers state: “We propose that the difficulty of evaluating value stems from the abstract nature and nearly infinite range. As a result... it’s not evaluated on a single scale, but instead on subscales composed of comparison standards that are selected at the time of judgment.” (Buechel and Morewedge 2014, p. 93). This study found that diverse types of business value can be obtained at different levels of maturity.

Customer insights were the type of value most commonly sought by the business units in this research. All business units aspired to achieve this form of value, as it allowed them to understand customer behavior and subsequently create personalized sales and service offerings. However, only one business unit at Level 4 maturity experienced this. It was found that this business unit had consolidated its individual databases from the various systems into a single integrated data warehouse, which gave it the ability to search for patterns and proactively present offers to customers based on their behavior. This architecture contrasted with business units at lower levels of maturity that had different databases for each function. Business units at lower EA maturity levels experienced many missed opportunities due to not having a single consolidated view of customer behavior.

The literature review of this study established that business value in the form of reduced system complexity (Gerber et al. 2010; Lankhorst 2013; Lumor et al. 2016; Rouhani et al. 2015) was attainable from EA. However, this study found that this form of value was achievable from EA maturity Level 2 onwards, and was facilitated through visibility and architectural standards that helped group common functionality and simplify interactions. Literature found that business-IT alignment (Bricknall et al. 2006; Pereira and Sousa 2005) was possible from EA. This study viewed *business-IT alignment* as a mechanism to achieve value, as opposed to a form of value that can be obtained. EA enabled alignment because it connected business and technology components through common threads (Harrison 2013; Henderson and Venkatraman 1993; Kurniawan and Suhardi 2013; Lapalme 2012). Improved system integration and standardization (Boh and Yellin 2007; Venkatesh et al. 2007) was another benefit identified in literature. This research established that these benefits were attainable for the business units

from Level 2 maturity onwards, and was enabled by EA architectural standards, and principles such as modularization, encapsulation and microservices, which helped them to simplify interactions through common interfaces.

Researchers argued that EA creates long term value, and minimal short term value (Bricknall et al. 2006; Van Der Raadt and Van Vliet 2009). The RBV theoretical framework used for this study argues that *tangible* resources are a source of short term value, and *intangible* resources are a source of a long term business value (Barney 1991; Bergvall-Kåreborn et al. 2009; Schöenherr 2009; Wade and Hulland 2004). This study theoretically contributed to RBV as it identified both tangible and intangible forms of value obtainable from EA implying that it is a source of both short term and long-term value. This was achieved by identifying tangible and intangible forms of value obtained from EA. The practical implications of this research also relate to the identification of the forms of value that can be attained at the different levels of EA maturity. Establishing this relationship between EA maturity and business value is of importance to practitioners as organizations can understand the forms of value attainable at different levels of maturity. The contribution to the practice of this research not only lies in the forms of value, but also where organizations should devote their efforts to reach higher levels of maturity.

CONCLUSION

In the movie, the great wizard turned out to be a fragile little man hiding behind a curtain. Dorothy took a scarecrow without a brain, a tin man without a heart and lion with no courage and helped them believe in themselves to succeed in their journey. Many organizations overlook developing their own capabilities and seek outside wizards to solve their problems. Glinda the Good Witch of the North summarized it when she said that, “You had the power all along, my dear.” (Fleming et al. 1939)

RBV provided the theoretical perspective to examine the internal capability of EA practices that influenced value for organizations. Business units at a lower maturity level perceived EA as an ad hoc practice, a blueprint, and an independent technology decision that was driven by a few individuals. This view contrasted with business units at the upper level of the maturity viewed EA as an embedded practice, that involved applying a set of tools and techniques to solve business problems. This outcome concurred with a controversial, but still relevant article entitled “IT Doesn’t Matter” (Carr 2003) that was published over a decade ago, and suggested that the only way to get value from IT was to build it into the business. Although EA is not the panacea or “silver bullet” (Brooks 1987, p. 10) to all issues associated with achieving value, it is definitely a vital piece to the puzzle. Literature shows that organizations that adopt EA obtain greater value than those that do not (Boh and Yellin 2007; Ross 2006; Tamm et al. 2015). This study extends that literature, by revealing EA practices at evolving levels of maturity, and the forms of tangible and intangible value attainable.

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