

Moulding information systems components and agitations for the adoption of enterprise application architecture for supply chain management

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Background: The components of information systems (ISCs) have become a critical factor in the adoption of enterprise application architecture (EAA) for supply chain management (SCM) within small and medium enterprises (SMEs) when used reciprocally with competent capital formation, mainframe and personal computers, application software systems, and information technology expert. The current study examined information systems components (ISCs) as they were used in the adoption of EAA in SMEs, scrutinised the Theory of Planned Behavior, and systematic literature review.

Objective: This paper seeks to contribute to the fundamental aspects of ISCs that influence the adoption of EAA for SCM in small and medium enterprises (SMEs) in South Africa, located in Limpopo Province of Capricorn District Municipality.

Methodology: A quantitative survey presented both diagnostic tests and data analysis as that of the methodological *modus operandi*. Descriptive data analysis generated Pearson's correlation and coefficient, along with analysis of variance (ANOVA) and linear regression. Data was collected through stratified random sampling of SME owners and managers.

Results: The most substantial results indicate that ISCs should be integrated with transactional support systems (TSSs), management information systems (MISs), information systems governance (ISG), decision support systems (DSSs), executive support systems (ESSs), knowledge management systems (KMSs), and web application architecture (WAA) to predict EAA acceptance.

Conclusion: This article described the greatest possible direction for considering ISCs when planning to integrate EAA adoption. Furthermore, the research results provide a preliminary overview and analysis of the results that support the alternative hypothesis that ISCs influence SCM adoption and implementation of EAA in SMEs.

Keywords: enterprise application architecture; transaction support system; management information system; decision support system; executive support system; knowledge management systems; web application architecture.

Introduction

Many businesses are finding it difficult to implement enterprise application architecture (EAA) for supply chain management (SCM) in Capricorn District Municipality, as they confront supply chain (SC) constraints and increased risks related with information security, as well as focusing on common resource constraints (Elworthy 2020). Supply chain management is an integral part of the enterprise's success that needs to be assimilated with technological replicas, as most entities operate via Internet sources (Mutukura 2020). In the global economy, enterprises focus on competitive strategies which include engagement in real-time SC planning, developing a collaborative SC strategy, adopting innovative SC automation solutions, implementing agile process improvements and considering cost drivers and business impacts, thus small and medium enterprises (SMEs) counsel within Capricorn District Municipality (Andriole 2020; Monroy 2020). A recent study by Mabotja (2019) exhibits significant challenges faced by SMEs because of the low participation rate in the Fourth Industrial Revolution. The objectives of SCM include shaping the SC from strategic innovation,¹ creating seamless SC operations by coordinating and integrating all activities and processes, implementing long-term relationships, managing SC information and evaluating the performance of the entire SC.

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In this white paper, the introduction of EAA is considered as a multifunctional model based on multiple characteristics in SCM activities, company resources and characteristics. Because of the contradictory nature of the research hypothesis, an appropriate integrated regulation is required to effectively justify resistance to the adoption of the EAA. There is a link between information system components (ISCs) and the actual uptake of EAA for SCM in SMEs with relevant production sources, and some are addressing the challenge on an *ad hoc* basis (Wing 2007:149). Gibbs, Sequeira and White (2007) used the e-business adopter model, which emphasised a systematic flow of data sources, and additionally illustrated this distinction from SMEs in an examination of different categories of SMEs: (1) emails used for effective communication; (2) world market interactions (through the sites); (3) order or buy online via e-commerce; (4) e-business to integrate SCs; (5) affiliates that link open information to customers, suppliers and other partners and (6) digital ecosystem used for knowledge sharing in natural selection or evolution of services. In this regard, the study determined the adoption of EAA for SCM in SMEs that are advanced in interactive websites, intermediate static websites and beginners.

Strategic innovation

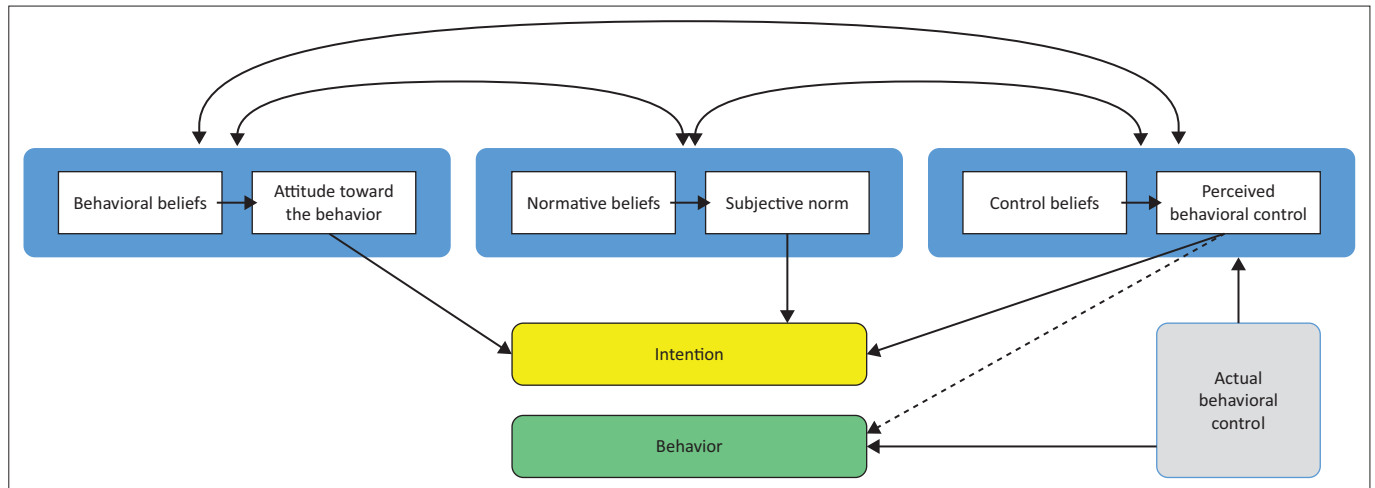
Whilst a variety of definitions of the term 'strategic innovation' were proposed, this article uses the definition as a mechanism used in product and service innovation that involves complexities in algorithms and legal protection of intellectual property with competitive factors in specific periods (Bessant & Tidd 2013) with loss or of Internet located in Capricorn District Municipality. It is therefore important to highlight that four subregions of Capricorn District were examined, namely, Blouberg (Bochum) Municipality, Molemole (Dendron) Municipality, Polokwane Municipality and Lepelle-Nkumpi (Lebowaqomo) (Administrative Divisions of South Africa 2018). Enterprise application architecture represents relationships and interactions between components such as user interfaces, transaction processing monitors, databases and others with the primary goal of ensuring that all elements work together and appropriately (Orekhova 2021). This article is organised into four sections covering theoretical review, conceptual review, research methodology (questionnaire development, actual answering of EAA questions, stability diagnostic tests, variable normality test and linear regression) and finally conclusion and recommendations, with future remarks peppered with a possible variety of future research opportunities.

Theoretical review: Theory of Planned Behaviour

In the new global economy, Fishbein and Ajzen developed the Theory of Planned Behaviour (TPB) in 1967 for determining organisational behaviour and human decision processes towards the adoption of technology (Fishbein, 1967; Ajzen, 1991). Theory of planned behaviour is regarded as a psychological theory that links beliefs to behavioural

patterns of individuals related to a phenomenal subject. Different authors have measured TPB in a variety of ways: (1) Benade and Pretorius (2012) explicate the system architecture and enterprise architecture juxtaposition with high-level business process model of technology-based enterprise that illustrates, managing the enterprise strategically, performing core value chain, performing marketing management, performing technology management and developing new products, processes and technologies. (2) Hackman and Knowlden (2014) confirm that TPB indicates that intent directly predicts behaviour, providing considerable motivation to consider implementation purpose when adopting information technology (IT). (3) A key concern is in line with knowledge management systems (KMSs) and a class of algorithms that includes lattice-based systems for manipulating heterogeneous information sources (Andrade et al. 2003). Nonetheless, it needs to be determined whether SMEs might be able to exercise three user determinants on TPB, namely, effort expectancy, social impact and facilitation conditions, to engage in EAA adoption for SCM (Hazen et al. 2014). Theory of planned behaviour makes employee engagement suggestions based on specific behaviour patterns, merit and times (Escobar-Rodriguez & Bartual-Sopena 2015). This refers to the definition and evolution of thinking and ideas and a concerted attempt to develop ISCs that could eventually lead to the development of a planned, systematic framework and strategies for EAA deployment (Kelly 2018; Mkansi & Acheampong 2012). Figure 1 depicts the TPB with six components, a single determinant as actual behavioural control, and the objective to encourage SMEs to adopt EAA (Boston University 2019).

The adoption of EAA is based on the TPB considering the managerial roles performed within the enterprise (Ferreira, Erasmus & Groenewald 2013; Hellriegel et al. 2012). The behavioural belief intervention resulted in post-intervention changes in attitudes but did not affect intention or behaviour. In this research, the effort expectancy and facilitation conditions are used in the conceptual research model. Nevertheless, the social behavioural aspect is included as the study concentrates on the owner's physiognomies and incitements (Coulson-Thomas 2012). Information systems are an integrated set of components for gathering, storing and transforming data into a usable format considered as information that could be used for taking rational decision-making (Zwass 2018). Theory of planned behaviour explains three user determinants, namely, effort expectancy, social influence and facilitation conditions, to engage in EAA adoption (Hazen et al. 2014). It emphasises conceptual actual adoption of EAA based on the thorough application of managerial roles, such as planning, organising, leading and controlling (Hellriegel et al. 2012). Tagler (2019) expresses how, in the past, research using TPB was mainly concerned with changing attitudes and subjective norms of employees rather than actual adoption. From an econometric perspective, ISCs could be considered, firstly, by identifying fundamental relationships when a dependent variable and its effect give rise to additional outcome of interest. We begin by clarifying the



Source: Boston University, 2019, *The theory of planned behavior*, viewed 12 October 2022, from <https://sphweb.bumc.bu.edu/otlt/mph-modules/sb/behavioralchangetheories/BehavioralChangeTheories3.html>

FIGURE 1: Theory of planned behaviour.

identification challenge (Dippel et al. 2018). The extended TPB model includes interpersonal and situational variables that may have an influence on the attitude towards intention to use for SCM in SMEs (Hackman & Knowlden 2014). The theory includes behavioural achievement that relies on motivation and ability, which are differentiated with three beliefs, namely, behavioural, normative and control for internal and external systems used in SCM. This shows a need to understand the motivational aspects of the owners' characteristics. Theory of planned behaviour was generated using the same method that was detailed for the adoption of EAA, where attitudes, behavioural intention, subjective norms, social norms, perceived power and perceived behaviour were scrutinised. In the 1990s, firms adopted networking standards and software tools that could integrate disparate networks and applications for better enterprise-wide and competent infrastructure (Mkansi & Acheampong 2012). This theme came up, for example, in the discussions of database management as a prerequisite for the actual adoption of EAA (Ardley, Moss & Taylor 2016). Ownership on ISCs is crucial for enhancing SMEs' privacy and information confidentiality (Accenture 2012; Sjögrén, Flainen & Syrjä 2017). It would be expedient for SMEs to develop a structure that involves testing different components and interactions which exonerate the adoption of EAA for SCM (Weber, Geneste & Connell 2015).

Small and medium enterprises attempt to design or develop EAA that accommodates flexible enterprise interchange in line with technological adoption (Prasanna et al. 2017). However, no attempt was made to quantify the association between TPB and ISCs in such a way that none of the internal or external users will be affected, thus leading to SCM destructions. Information systems include the transaction support system (TSS), management information systems (MISs), decision support systems (DSSs), executive support systems (ESSs), data warehousing, data mining and KMSs (Sharma 2018). With successive increases within the intensity of the TPB, the adoption of EAA moved further to the extensive application

denoted as thus; (a) attitude and subjective norm that account more for the variance in individuals' desires than intentions or self-predictions, and in some instances intentions and self-predictions were absolute predictors of behaviour (Armitage & Conner, 2001). (b) A piece of precise information on employees' perspectives hoped to accumulate more specific confirmation on the adoption of EAA, which may be accustomed prepare the intervention within the pre-post processes (Ajzen & Fishbein, 2005). This information may be accustomed develop targeted interventions geared toward easing employees' attitudes and behaviours, and cognitive dissonances towards adopting EAA.

Evolution on the adoption of enterprise application architecture

The past decade has seen the rapid development of IT in many business organisations, industries and corporations around the globe. Representation on an extensive range of sources includes the number of authors that set out the different ways in which the evolution took place in various dimensions that includes; (a) evolution of punch cards in 1880 to computer-tabulating-recording in 1911. (b) Information systems were first introduced in the 1960s to deal with accounting management issues (Mwendwa, 2017), emergence of management information systems (MIS) in 1940s and 1950s, MIS Developing beyond Accounting between 1970 and 1990 Weedmark (2019). Furthermore, Weedmark (2019) indicates the five Eras of MIS; (a) First Era (mid-1960s to mid-1970s) focused on governance and needs of the management. (b) Second Era (mid-1970s to mid-1980s) focused on personal computers (PCs), minicomputers and mid-range computers (c) Third Era (mid-1980s to late 1990s) focused on centralisation and decentralisation of information (d) Fourth Era (late 1990s to today) focused on social media, search engines and ubiquitous computing. (e) Fifth Era (today forward) that focused on diverse information platforms that includes cloud computing. If the debate is to move forward, a better understanding of EAA for SCM activities in SMEs needs to be developed.

Systematic literature review

A systematic literature review serves to review the literature in order to determine or test the research hypothesis by answering structured and specific research questions (Danson & Arshad 2015; Onwuegbuzie & Frels 2016). The researcher whilst conducting a postgraduate dissertation study from 2018 to 2020 at the University of Limpopo conducted an efficient literature review of revisions that have sparked interest in ISCs. Information systems were the focus of a study by Wessels et al. (2005) in which the authors found that the existing ISCs can be efficient based on user requirements for all users from top, middle and bottom levels with relevant information. The types of ISCs discussed in the coming sections are incorporated with TRA. The TPB is a psychological theory that links beliefs to behaviour and asserts that three core components, namely, attitude, subjective norms and perceived behavioural control, together shape an individual's behavioural intentions.

Transaction support systems

Transaction support systems are a type of data processing that breaks down work into discrete, indivisible operations called transactions. Naini, (2022) defines TSSs as an information processing system that captures and processes every single transaction that takes place within the enterprise that including multiple activities such as; collecting, retrieving, modifying, and all other sets of activities that trigger the retrieval of all transactions for a reliable, consistent, and efficient results. The TPB models the relationship between these two contingent online behaviours and their respective intentions, invoking consumer behaviour theories and implementation intention theory, respectively, and identifies a comprehensive set of salient beliefs for each behaviour. Information systems include the TSS, MISs, DSSs, ESSs, data warehousing, data mining and KMSs (Sharma 2018). Other researchers (Ajzen & Fishbein 2005; Armitage & Conner 2001) have extensively discussed TPBs as follows:

1. **Behavioural control:** The behavioural control indicates a key piece of the sound philosophy on TPB that involves recognising an individual's ability to respond to EAA adoption in a variety of ways without independence, with room for error and with less oversight. A consequence of this is that TPB may have a significant impact on employees' behavioural control in essence for decision-making towards the adoption of integrated IT, with reference to EAA.
2. **Attitude towards the behaviour:** Attitudes are important in human behaviour because they can be a subjective norm intended to motivate others to respond positively to the introduction of EAA. In this case, attitude towards a behaviour detects whether performance will produce positive or negative results, in this case for the adoption of EAA. Similarly, Kebba (1994) suggests that the expectancy theory, first proposed by Victor Vroom at the Yale School of Management, suggests that behaviour is motivated by anticipated outcomes or consequences. The analysis of TPB undertaken here has extended the

knowledge of attitudes towards the behavioural pattern for employees as triggered by fear of change and unknown within certain parameters.

3. **Normative beliefs:** When confronted with individual perceptions of social normative pressures or the beliefs of relevant others, ISCs are becoming increasingly important as the first component to adopting EAA-applied IT. Furthermore, normative beliefs are individuals' beliefs about the extent to which important people in their lives believe they should or should not perform certain comportments. In general, therefore, it seems that normative beliefs are subjective probability that a given referent encourages performance of the behaviour, just like in hostile SME environment that failed to engage the employees, with low flexibility for integrating new application systems to existing hardware and poor service mindset.
4. **Control beliefs:** The concept of locus of control is central to the entire IT discipline, indicating the individual's opinions on any subject phenomenon in the presence of factors that may hinder performance in SCM in relation to their behavior in relation to the adoption of EAA. A greater feasibility study could neutralise the presence of factors that may facilitate or impede performance of the behaviour and making TPB more efficient in weakening the misconceptions that might contributes towards the perceived behavioral control along with perceived power.
5. **Perceived behavioural control:** Perceived behavioural control has traditionally held the belief that an individual's perceived ease or difficulty in performing a particular perceived behavioural control is conceptually related to self-efficacy and determined by the totality of accessible control beliefs towards ISCs within the organisation. The perception of the difficulty of enacting a behaviour is defined as perceived behavioural control. The critical difference between TPB and reasoned action is perceived behavioural control. An implication based on perceived behavioural control is that both ISCs and TPB should be taken into account when establishing the adoption of EAA.
6. **Behavioural intention:** The behavioural intention towards the adoption of EAA could be perceived as an issue revolving ISCs that has received a considerable amount of critical attention. Theory of planned behaviour can also actually assist in assessing the behavioural intentions of practitioners who have a strong intention to implement EAA. This refers to the influencing entrepreneurial a specific behaviour; the stronger the intention to perform the behaviour, the more likely the behaviour will be performed. On the upper hand, subjective norms indicate the belief that perhaps the majority of the people approve behaving in a certain way. A key strategy should include TPB in all facets; priority should therefore be to plan for the long-term care of IT innovation strategy that could assist in embracing the intentions of employees towards the adoption of EAA.
7. **Behaviour:** Behaviour is a key psychological reaction interpreted in actions that are acceptable or unacceptable

based on certain merits that are guided by ethical conduct for the business organisation. The TPB model, which understands the assumption of EAA in relation to individual behaviour and modifies their interventions in a positive direction, is one of the most important current discussions in SCM and moral attitude (Ajzen & Fishbein 2005). Theory of planned behaviour proposes that an individual's prospect of engaging in a healthy behavioural pattern is correlated with the strength of his or her intention to engage in the behaviour. A reasonable methodology to tackle this issue could be to apply psychological perspectives on technology that would shape an employee's thoughts and feelings on cyberphobia (fear of using Internet) and to some extent even mechanophobia (fear of operating machinery). In the last decade, the Fourth Industrial Revolution has been developing rapidly in many countries, in which TSS is used to collect and process detailed information needed to update data on the fundamentals of SCM activities in companies (Zandbergen 2018a). The TSS oversees business operations and incorporates operational and financial management cycles (Chen et al. 2014). Notable examples in TSSs are accountants and auditors who know what and how these transactions are recorded and processed in order to obtain meaningful information. All of these events are called transactions and require a transaction processing system. Tracking of items such as collection, processing, storage, reporting, source documents, journals and registers, ledger and file summaries and printing is part of the TSSs.

The basic operations of SMEs are linked to transaction processing systems that capture and process the detailed information needed to update the data and create detailed information (Zandbergen 2018b). Taken together, these literature reviews suggest that it would be advisable for SMEs to have systems that can easily manage both in order to effectively implement the EAA for SCM. For successful TSS, data must be systematically processed and analysed with algorithms (Smallcombe 2020). After the conformational analysis of TSSs, it is deemed necessary to consider two methods, batch and online processing for all transactions that need to be prepared before actual processing (Adams 2021). TSS can be classified in terms of three main purposes: to maintain accounts across the enterprise, update transactions in a timely manner and generate meaningful results in SCM (Smallcombe 2021). The debate over TSS has taken on new meaning as many argue that it has the ability to control, manage and monitor multiple transactions to determine which has higher priority than the other and gain credibility as a dimensional standard true (Sam 2021). A much more systematic approach would identify how TSSs interact with other variables thought to be related to the successful adoption of EAA for SCM.

Management information systems

Management information systems are an ISC used for decision-making and for the coordination, control, analysis

and visualisation of information in an organisation. It incorporates people, processes and technology into an organisational context. Theory of planned behaviour in relation to the use of the MISs is also influenced by behavioural control and perceptions of user behaviour when using the system. Several studies thus far have linked with MIS as a set of systems and algorithms that collect and transmit data from a range of sources that compile information and present it in a readable format for SCM activities (Hamlett 2018; Ingram 2018; Ray 2015). For the primary use of the term MISs to explore different systems use transactional algorithms that have been integrated into advanced and commercially viable organisations (Walport & Rothwell, 2013; Hamlett, 2018). Management information system is considered to be a master's degree in information management that includes both architect experts and software developers (Portugal 2016). In their article published in 2014, entitled, 'Performance Expectancy and Use of Enterprise Architecture: Training as an Intervention', Lee and Rhim (2014) proposed that a greater degree of training within the enterprises will enhance the adoption of EAA. They further suggested that service response time measures how quickly MISs respond to errors that occur in the communication lines, mainframe computers and software programs (Lee & Rhim 2014). The history of modern MISs parallels the evolution of computer hardware and software (Boykin 2017). With the parallel conversion, the current and the new systems are operated together for some time. At some point the current system will be completely decommissioned and all users and participants will only interact with the new system.

Karim (2011) identifies several benefits that MISs have for SCM, some of which include leveraging intellectual capital, supporting tactical planning, maintaining competitive advantage and then improving the decision-making process. By supporting strategic planning and improving the decision-making process, leveraging MIS data leads to improved use of internal and external information (Porteous 2014; Segal 2018). Based on this, it is important that for the practical adoption of the EAA, some elements of MIS, such as computer hardware, computer software, telecommunications, databases, data warehouses, and people and processes, matter the most (Gregersen 2021). The present study confirms previous findings and provides additional evidence suggesting that MISs should be advocated for the adoption of EAA for SCM.

Information Systems Governance

Information Systems Governance (ISG) can be defined as a set of rules that enable executives and stakeholders to determine how they will make decisions about the management of ISCs. The TPB roughly clarifies compliance and violations of information security policies, as well as other behaviours. Information Systems Governance plays an important role in constructing a formidable EAA for SCM in SMEs. Lindros (2017) used the term 'ISCs' with reference to a

formal framework that provides a structure for organisations to ensure that IT investment supports business objectives, in a classic process for the adoption of EAA. Information Systems Governances entail the specification of decision rights and an accountability framework to ensure appropriate behaviour in the valuation, creation, storage, use, archiving and deletion of information. One criticism by much of the literature on ISG is that it includes the processes, roles and policies, standards and metrics that ensure the effective and efficient use of information in enabling an organisation to achieve its goals (Schulz & Dankert 2016; Smallwood 2014). In some instances, ISG relates to decision-making authority, enterprise capabilities, structures, processes and relational mechanisms that result in an alignment between business and IT (Mohamed, Kaur & Singh 2012).

Information Systems Governance exposed SMEs that operate without correct measures in Internet security governance to theft of information, hacking and unauthorised users based on the complexity theory on information ISG (Grant 2011; Mishra 2015). Information Systems Governance strengthens the strategic aspects of IT risk and compliance as well as to have proper information governance (Hagmann 2013; Segal 2018). One feature of SMEs is that they are less likely to have formalised governance and management arrangements than larger firms (Gao & Hafsi 2015; Prasanna et al. 2017). The complexity of data storage, sharing, analysis and application integration reflects several challenges for any governance platform in SMEs (Little 2010; Truong & Dustdar 2012). Information Systems Governance can provide guidance and assurance to SMEs in terms of information security and enterprise modelling for SCM (Massana 2020). In general, it seems that an appropriate ISG could assist the SMEs in securing their classified information and confidential documents without any computer security bridge by using biometric technology and cloud computing.

Decision support systems

Decision support system is a computerised program used to support determinations, judgements and procedures in an organisation or business. The accuracy of the TPB game comes from the addition of perceived behavioural control, which takes into account whether a person truly believes they are in control of the behaviour they choose to perform. Decision support systems are increasing, recognised as a major concern in the adoption of EAA. In IT, DSSs can be demarcated as a computer program application that analyses enterprise data into accurate information presented to tactical managers for rational decision-making (Rouse, 2018; Sharma, 2015). Moreover, DSS helps managers to make sound decisions, encrypted in EAA (Beal 2018b). Enterprise application architecture uses different mechanisms such as spatial analyses and map-based output compared with the existing types of ISCs (Sewdass 2012; Sun 2011). Decision support system challenges include high cost of mechanisation, equipment and machinery break down, poor working conditions, ineffective procedures and forms, and disorganised

file systems with resultant poor control (Ferreira et al. 2013; Karim 2011). In some occurrences, SMEs encounter conceptualising the essential components when addressing the needs of different departmental or cross-functional activities (Prasanna et al. 2017). Decision support systems incorporate retrieval components that seek to identify related instructions or operational functions that match user specifications (Gretzel, Hwang & Fesenmaier 2012). To date, this method has only been applied to ease different algorithms involved in DSSs and EAA incorporated for SCM (Ray 2015; Walport & Rothwell 2013). Each has its advantages and drawbacks as the DSSs have the capability of outlining or projecting information graphically with the inclusion of an expert system. In developed industries, models could also be used over a planned SCM to represent and explore new systems such as EAA (Rouse 2018).

Decision support systems are also part of MIS for the provision of detailed reports of activities as it also functions well as Management by Objectives tools (Hamlett 2018). As a well-structured and designed model, DSS provides the ability to create, maintain and manipulate statistical and mathematical models by using a capabilities encrypted in modelling packages (Sharma 2015). Enterprise application architecture requires additional systems to support internal arrangements for SCM (Montilva, Barrios & Besembel 2014; Ramlee & Berma 2013). Decision support systems are designed to help managers come up with solutions to problems on the basis of a database or knowledge base (Kruckhans 2020). Notwithstanding some confines, for simplicity for the adoption of EAA, it is encouraged that DSSs should be simplified throughout the managerial levels within the SMEs.

Executive support systems

Executive support systems are computerised systems that provide top managers with easy access to internal and external information relevant to strategic decision-making and other managerial tasks. A TPB indicates strong support for a decision-making process based on attitudes about perceived positive and negative impacts on SMEs, subjective norms about social expectations and perceived control over resources to overcome barriers related to EAA implementation. Executive support systems have traditionally believed that the EAA was designed to inject data about peripheral users, such as current tax regulations or competitors, but they also pull aggregated information from internal MIS and DSS (Free Essays 2018). The term 'ESS' refers to instances where companies employ specialised information technologies to provide accurate and timely data to senior management. Executive support systems are designed not only for senior management to make strategic decisions that would increase the company's long-term success but also for middle management (McLaughlin 2016; Power 2008b). The concept of ESSs originated in four scientific domains (Cano 2020) and provides timely information with short response time and fast retrieval, resulting in accurate information through communication channels, office automation, analytical support and intelligence. By instilling

pride in their work, kaizen aims to empower employees, increase employee satisfaction and encourage a sense of accomplishment. It is easy to see why kaizen is so difficult to implement, especially in non-Japanese companies, when many publications fail to portray the culture of kaizen effectively (Kamola 2019). According to some experts, the ESS concept is based on the kaizen philosophy, which consists of eight principles (Kos 2020):

1. **Discard conventional fixed ideas:** This includes the mapping and structuring of the company's knowledge resources in a grid by considering two filters for structured and unstructured structure configurations (Postolache 2019). In addition to mapping and structuring the knowledge resources, disseminating knowledge within SMEs, contextualising knowledge and discovering new knowledge, there is much more than technology to implement previous knowledge sharing policies and motivate employees.
2. **Detect the elements of failure:** This includes technology consultations on variation governance to avoid technological nonsense from everywhere by considering the best architectures to align a perfect EAA for SMEs (Andriole 2020). The existing accounts do not resolve the contradiction between the ISCs and the adoption of the EAA.
3. **Failure justifications:** Past experience helps apply the opposite principle, to do it yourself with robotic drowning and predictions, which are essential to eradicating entrepreneurial failure (Regalado 2018). Another delinquent with this approach is that if the SMEs do not take the ISCs into account, adopting the EAA becomes difficult.
4. **Error corrections on a spontaneous effect:** This is common in TSSs where electronic funds are paid to the wrong suppliers and creditors (Eckler & Bolls 2011; Elworthy 2020). In this analysis, there are several sources that lead to errors. The main mistake is that SMEs fix system errors related to the EAA.
5. **Strive for perfection:** Kaizen is a competitive strategy in which all employees work together to create a strong culture of continuous improvement, with little room for improvement at margin of error (Kos 2020). The model involves identifying opportunities in the process flow, planning how the current process can be improved, executing changes and reviewing how the adoption of EAA works for the entire SCM team. After completing the ISCs, the process of model specification and parameter estimation needs to be performed.
6. **Marginalise cost on the adoption of EAA:** This includes Pareto principle that indicate 80% for production output versus 20% for production input in SCM with correct *modus operandi* that strives to marginalise cost, renewal or transformation of technology (Laoyan, 2021). Enterprise application architecture adoption might be better if not covering all other users (Goldenberg & Dyson 2018). There are two basic approaches currently used in adopting EAA. One is the multicloud approach used in cloud computing

and the other is the traditional monolithic approach housed within the enterprise systems.

7. **Hardships trigger stimulus for wisdom:** The common ISCs such as; computer hardware, computer software, telecommunications, database and data warehousing, human resources and procedures for collecting data and transforming it into a final output (Gregersen, 2022). Therefore, the operating resource and management challenges could be avoided by incorporating SCM ideas all enterprise specialty with realistic models that lower the level of assumptions and explore different channels to acquire wisdom rather than relying on one source (Hałabuda, 2020; Seghafi, 2021). Debate continues about the best strategies for the management of hardships through outsourcing challenging aspects that need the attention of Architect expert knowledge.
8. **Five-why method:** The five-why method is known as the Ishikawa (fishbone) used for answering 5 why questions (Chai, 2022). This provides an overview on five questions, which could help identify the cause-effect of the problem or failure affecting SCM that requires a technical expectation to solve the problem. A number of limitations need to be noted regarding the present phenomena, covering the following "five why questions". First: Why did the ISCs fail to maintain the algorithms in the adoption of EAA as planned? *Probable answer:* There was poor development and assembling of EAA. Second: Why were the SCM functions such as purchasing, operations, logistics, resource management, and information workflow was miscalculated? *Probable answer:* Advanced planning and scheduling (APS) software can help synchronise these five functions by providing systematic comprehensions of your manufacturing operations. Third: Was the EAA well configured for SCM? *Probable answer:* A bogus IT service provider was procured. Fourth: Why was a bogus IT service provider procured? *Probable answer:* Corruption perpetuated the cheaper and bogus IT service provider. Fifth: Why was a cheap and bogus awarded the deal? *Probable answer:* Procurement and purchasing processes were manipulated. Seiter (2018) supported the notion, writing that the benefit of using the fishbone is that hidden characteristics can be freely exposed through integrative algorithms with less bridging and manipulations.

Examining ISs infusion from a user commitment perspective, including IT infusion and end-users (Kim, Chan & Gupta, 2016; McLaughlin, 2016). ESSs are utilised in formulating, structuring, and facilitating all managerial tasks, particularly in SCM (Watson & Rainer, 1991; Nimsaj, 2016). ESSs focal point on operational activities, accumulating information from internal and exterior sources, and helping top administration with essential information for decision-making (Jennifer, 2017). As a comprehensive exercise, ESS goes beyond organisation facts structures by encompassing communications, office automation, analytics support, intelligence, flexibility, and ease of use that furnish timely data (Massana, 2020). After discussing how ESSs are constructed, the last area of this paper addresses how architect professionals have interaction with the executive

crew and business strategists, as technological specialists. What one may take a look at is how comprehensible all of this is for non-technology leaders (Andriole, 2020). Executive Assistants provide high-level administrative aid to executives in a business enterprise or corporation.ww

However, executive systems perform duties that may additionally have an effect on a company's success or profitability, such as: helping with market research, coaching staff, and scheduling important meetings (Kruckhans, 2020). Yeaman (2001), shares insights about postmodern and Poststructural theory on six aspects:

Authorisation in the progress-one moment - If an architect specialist asks questions about the EAA goals within the SMEs. Ultimately, Several questions will be answered at present, that includes; efficiency, competitive edge, remote work challenges, robust workflows, and positions for future growth (Rawal, 2021; Linton, 2022; Villanueva, 2022).

Toward an Anthropology of SMEs and the rules of understanding - They exist as relationships that are coherent to academic systems improvement for a positive IT adoption such as EAA. Applying academic communications and science in line with EAA adoption helps to improve the psychological perspectives and approaches based on SMEs.

Postmodern and Poststructural theory as criticism - Critical theorising in the perceptions' of employees is a distinct method of accessing the intellectual vitality versus academic achievement in line with technological know-how within SMEs. The well worth of capital formation depends exactly on their academic achievements that could shape the adoption of EAA within SMEs for SCM. SMEs searching for apprehending postmodern and Poststructural machine that includes better learning strategies that are beyond individual-level.

Understanding the Postmodern - Modernism is trust in science of technology, and rationalisation of productive things to do for the virtuous of IT as a generic concept leading to distinct branches. This leads to modern descriptions of SMEs in terms of SCM challenges such as demand forecasting, digital transformation, material scarcity, etc...

The foundation of following post-structural studying was once employed based totally on the following; defining the phenomenon underneath study as a relation between SCM, SMEs and genuine adoption of EAA. Constructed and grouped variables with possible variations between these three relationships. Five discrete reasons emerged from this:

Firstly, automation and systematisation of workflows and processes: IT systems are key to delivering the information and intelligence needed by SMEs to improve innovation with the adoption of EAA. In developed economies, successful enterprises use application software for streamlining complex workflows and algorithms.

Secondly, information security: By investing in data storage systems and secure communication networks, EAA could give employees access to the information they require in SCM, such as data analytics to help predict and anticipate customer demand, process simplifications and structural savings.

Thirdly, cost reduction and time management: Cost marginalisation remains a priority for organisations in every sector of the economy. IT systems can reduce SMEs' costs by

automating business processes so that your employees can work more efficiently. Proper time management is one way to ensure that every internal stakeholder gets the most out of their daily routines.

Fourth, investing in IT systems and tools: Improving collaboration could assist in achieving ultimate growth and productivity targets. Latest productivity tools and applications are used to settle for better operational work efficiency.

Fifth, customer service and communication: A detailed and meticulous data warehousing create a complete database of all customer interactions that include purchasing, inquiries, complaints and service requests, providing customer service and information needed to respond just in time and efficiently to customer calls. A central repository for processes, such as data mining, allows end-users to share and manage information with high-security verification and validation.

Knowledge management systems

Knowledge management systems are a subset of organisation content material management software that includes a suite of software programme that specialises in the way data are collected, stored and/or retrieved. Jointly determined by way of knowledge sharing intent and perceived behavioural control, the TPB tasks the subjective norm around understanding sharing for profitable EAA adoption. In the history of the Fourth Industrial Revolution, KMSs are used to be considered a key factor in the introduction of EAA. The extensive use of the term KMSs is sometimes equated with applications designed to seize all information within the agency and make it without difficulty accessible to employees anytime, anywhere (Asif, Braytee & Hussain 2017; Birkett 2018). In other words, KMSs are a repository software system for safeguarding information. Most KMSs supply an 'information hub' where content can be created, organised and redistributed via search equipment and different points that let users discover answers shortly (Smith 2013). Knowledge management system supports the selection needs of senior executives (Zandbergen 2018b). Some of the tangible benefits of the usage of KMSs encompass accelerated distribution of knowledge, higher data accuracy and consistency, improved worker satisfaction, less time spent looking for solutions, getting new personnel quicker on-board and retention of knowledge when the user is logged off from the machine (Smith 2013). It uses distinctive software programme modules served through a central user interface, with personnel education and orientation through the provision or sharing of electronic archives (Birkett 2018).

However, in some instances, KMSs play a necessary role in the adoption of EAA, wherein it requires some stage of expertise, techniques, technologies and tools for SCM guide (Andrade et al. 2003). Classic examples of KMS encompass cross-training programmes, document administration systems, content management systems, social networking tools and chatbots (Greene 2021). Varieties of strategies are used to assess KMSs through SMEs, where each has its very own blessings and drawbacks (Becky 2017; Birkett 2018). Small and medium enterprises ought to plan an expertise administration application that brings necessary adjustments to utilise the

available know-how correctly in terms of scalability across the technology and employees (Greene 2021; Postolache 2019). Conduct surveys and gauge metrics that furnish a unique description of end-user ride in creating, sharing and eating expertise (Raza 2020; Seghafi 2021; Smith 2013).

Knowledge management systems can also be divided into four main classes: factual knowledge (measurable, observable and verifiable data), conceptual knowledge (relates to views and systems), expectation knowledge (knowledge rooted in expectations, hypotheses or judgements) and methodological knowledge (deals with decision-making and problem-solving). Becky (2017) discusses the challenges and strategies for using KMS which consist of growing a lifestyle of flexibility and collaboration, security, measuring knowledge, identifying an expert, document storage and management, disseminating knowledge in the course of an organisation, chronic improvement and figuring out where KMSs is in-housed. The proof introduced in this section suggests that KMSs could be used through SMEs to seize all customer and supplier facts through an 'information hub' where the content material can be created, organised and redistributed through search equipment and different elements that provide customers with agility.

Web application architecture

Recent traits in the subject of IT have led to a renewed interest in web application architecture (WAA) for the development of SMEs in adopting EAA, especially in SCM. Web application architecture is a blueprint of concurrent interactions between components, databases, middleware systems, user interfaces and servers in an application. It can additionally be described as the diagram that logically defines the connection between the server and client side for a higher web experience. The TPB states that by means of applying the relative mannequin to study competing products, exclusive dimensions and strengths can be captured to differentiate the effect on the preference of the choice introduction of EAA. There has been a wide variety of longitudinal randomised experiments. There have been a series of randomised longitudinal experiments that keep away from typical crashes, promote simplicity, agility and automation and facilitate compatibility with different software and hardware structures that contain WAA that had been suggested when EAA was introduced. One of the most good-sized cutting-edge discussions in IT and WAA in philosophy is to promote code quality, scalability, reliability performance and openness. Web application architecture refers to the operations of SCM activities, and EAA refers to the complete gadget that describes components of web applications, connections, relations and dependencies between them.

It further describes how back-end and front-end elements are organised, how they disseminate facts from inside and to exterior users and how they scale and construct a unified software product (Popovych 2021). In 2019, Mitchell validated that the substitute of manual information collaboration with the Fourth Industrial Revolution led to industrialised corporations that adopted networking standards and software

equipment for well-suited enterprise-wide infrastructure (Mitchell 2019). Without network standards, it would be difficult, if not impossible, to develop networks that only share information in SMEs with other external users. For WAA to be accomplished, Internet and network connectivity are collective necessities used in collaboration with routers, optic fibres, switches and gateways linked together with computers, printers, machinery and equipment to produce digital information (Habraken 2001). The controversy over scientific evidence for components of ISCs has raged in the developed world of technology for over a century. The causes of ISCs have been the subject of intense debates within the scientific community, putting pressure on both existing and emerging SMEs. Models of web architecture components cover forecasted activities, implementation for algorithms, service arrangements, data storage and specification for data requirement (Deremuk 2021). Web application architecture facilitates the connection and interactions that include multiple components such as database and middleware so that numerous applications can function together with each other (Shrestha 2021). The benefits of the novel approach to developing WAA could be discussed under three headings: smooth app performance, high scalability and flexibility, and easy integration of new features and cost-effectiveness to attract the interest of small business owners. The geographic locations in terms of factors might also affect the Internet connectivity creating greater distortions in pathways via signal (Ahmed & Kawser 2021).

The SME infrastructure also requires software to link disparate applications and enable data to flow freely amongst different parts of the business. Information systems manufacturing techniques allow the development of advanced SCM (Ellis 2017; Michael & Mike 2014; Tamrin, Norman & Hamid 2017). As a result of EAA adoption, it appears that WAA alone is not the causative factor of SCM, resulting in a monolithic three-tier model that includes microservice architecture, cloud architecture and event-driven architecture. Based on architectural designs for SMEs the possibility to make decisions on the adoption of EAA depends solely on the value of their disposable income. Internet-related advice and increasing productivity across SMEs might depend on the type of Internet (Duffy 2017; Kim et al. 2016). Despite its exploratory nature, this study provides insights into the adoption of EAA, where WAA requires a reasonable Internet connection that could facilitate communication for both internal and external users.

Research strategy

Research approach

A quantitative methodology was considered for the study. A stratified random sample of SMEs, comprising owners and managers, was recruited from Polokwane Municipality, covering Blouberg Municipality (Bochum), Molemole Municipality (Dendron), Polokwane Municipality and Lepelle-Nkumpi Municipality (Lebowakgomo). By the end of the survey period, data had been collected from 310 SMEs who were considered as business owners and managers. A door-to-door data collection was done. The methodology

was grouped into several divisions: questionnaire development (a pilot study was conducted to strengthen the feasibility for the questionnaire) and stability diagnostic tests (which included normal distribution, together with Cronbach's alpha for data reliability).

During the distribution of the questionnaire, the researcher was clear that the respondents should be either the SME owner or the manager in order for the reliability, and 330 questionnaires were distributed, of which 12 were not returned and 8 were not completed. The results were then interpreted using 310 questionnaires.

Figure 2, indicates the initial sample size at 330, of which 12 were not returned, whereas the other 8 were not adequately completed. As such only 310 were processed for the results.

During the distribution of the questionnaire, the researcher was clear that the respondents should be either the SME owner or the manager in order for the reliability, and a 330 questionnaires were distributed, of which twelve were not returned and eight were not completed. The results were then interpreted using three hundred and ten questionnaires.

Stability diagnostic tests

Normal distribution on information systems components

The current statistical analysis on the ISCs might contribute positive remarks for further statistical examination on the linear regression model for utmost results on the actual adoption of EAA for SCM in SMEs. As indicated in Figure 3, the sample distribution for ISC components produced a distribution curve with a μ of 0.240 and σ of 3.761.

Information systems produced a negative skewness at -0.595 and kurtosis at -0.035 . A normal random number for distribution is processed. The standard normal distribution has a kurtosis of zero, indicating a 'peaked' distribution, and positive skewness 'reflects the probability distribution with the high level of concentration on the right side'. The kurtosis figure should be near 0 and the figure of $+0.035$ indicates that it is a normal distribution, which is slightly peaking and

$$n = \frac{N}{1 + N(e)^2}$$

$$n = \frac{1900}{1 + 1900(0.05)^2}$$

$$n = \frac{1900}{1 + 1900(0.0025)}$$

$$n = \frac{1900}{1 + 4.75}$$

$$n = \frac{1900}{5.75}$$

$$n = 330$$

Source: Leedy, P.D. & Ormrod, J.E., 2014, *Practical Research, Planning and Design*, 10th edn., United States of America: British Library Cataloguing-in-publication data, viewed 13 November 2021, from [https://cirt.gcu.edu/research/developmentresources/researchready/quantre search/sample_meth](https://cirt.gcu.edu/research/developmentresources/researchready/quantre%20search/sample_meth)

FIGURE 2: Sample size.

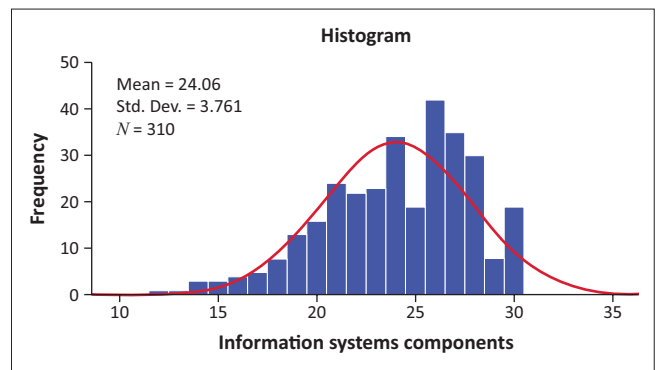


FIGURE 3: Normal distribution indicates an asymmetric distribution with acquiescent tails with a small number of outliers. The mean, median and mode are all equivalent at 24.06; $\sigma = 3.761$; $N = 310$.

TABLE 1: Pearson Correlations.

Variables	Actual Adoption of EAA	Information System Components
Actual Adoption of EAA		
Pearson Correlation	1	0.260**
Sig. (2-tailed)	-	0.000
N	310	310
Information System Components		
Pearson Correlation	0.260**	1
Sig. (2-tailed)	0.000	
N	310	310

Pearson correlations, on positive associations between variables @ 0.260**.

Sig. (2-tailed) @ 0.000.

Values are given as means ($n = 310$)

*, $p < 0.005$; **, $p < 0.000$.

**, Correlation is significant at the 0.01 level (2-tailed).

slightly skewed to the left. The distribution is asymmetric as μ is 0.240 and the median is 0.290.

Research findings

Pearson correlations on information systems and actual adoption of enterprise application architecture

Table 1 demonstrates the results on correlations between ISCs and actual adoption of EAA. The p -value is near zero at ' < 0.001 ', with the required value set at 0.05. The statistical technique analysis of variance (ANOVA) is used to test the hypotheses between the dependent variable, namely, actual adoption of EAA, and independent variable, namely, ISC components.

Pearson's correlation coefficient is 0.260, thus indicating that there is a positive relationship between ISCs and the actual adoption of EAA. The findings on association suggest that, in general, there is a positive relationship between ISCs and actual adoption of EAA bearing the change of the sign in mind.

Analysis of variance on information systems and actual adoption of enterprise application architecture

Table 2 ANOVA results attained for scores on ISCs and actual adoption of EAA. The independent variable is regarded as

TABLE 2: ANOVA.[†]

Model	Sum of Squares	df	Mean Square	<i>F</i>	Sig.
Regression	241.405	1	241.405	22.256	0.000 [‡]
Residual	3340.866	308	10.847	-	-
Total	3582.271	309	-	-	-

ANOVA, processed on dual variables,

Sum of Squares on; regression @ 241.405; residuals @ 3582.271; total @ 3582.271.

df @ 1; Mean square @ 241.405, residual @ 10.847.

F @ 22.256 and Sig. @ 0.000[‡].[†], Dependent Variable: Actual Adoption of EAA[‡], Predictors: (Constant), Information System Components**TABLE 3:** Pearson coefficients.

Model	Unstandardized Coefficients		Standardized Coefficients	<i>T</i>	Sig.	Collinearity Statistics	
	<i>B</i>	Std. Error				Tolerance	<i>B</i>
(Constant)	18.235	1.213	-	15.02	0.00	-	-
Information System Components	0.235	0.050	0.260	4.718	0.00	1.000	1.00

Pearson Correlations on dual variables: y = actual adoption of EAA & information systems components. Unstandardized coefficients (constant); *B* @ 18.235 & Std. Error @ 1.213.

Unstandardized coefficients; information systems components @ 0.235 & Std. Error = 0.050. Beta; Std coefficients: information systems components = 0.260.

T; actual adoption of EAA = 15.02 & information systems components = 4.718.

Sig. = 0.000.

[†], Dependent Variable: Actual Adoption of EAA

ISCs and the dependent variable is considered as the actual adoption of EAA.

General *F*-statistic is significant ($F = 22.256, p < 0.001$), thus signifying that, overall, the model accounts for a significant proportion of the variation in the adoption of EAA for SCM in SMEs. As the exact significance level is $0.001 < \alpha$ at 0.05, the results are statistically significant. The alternative sub- H_{a3} that 'ISCs affect the adoption of EAA for SCM in SMEs' is accepted, whilst the sub- H_{03} that 'ISCs does not affect the adoption of EAA for SCM in SMEs' is rejected.

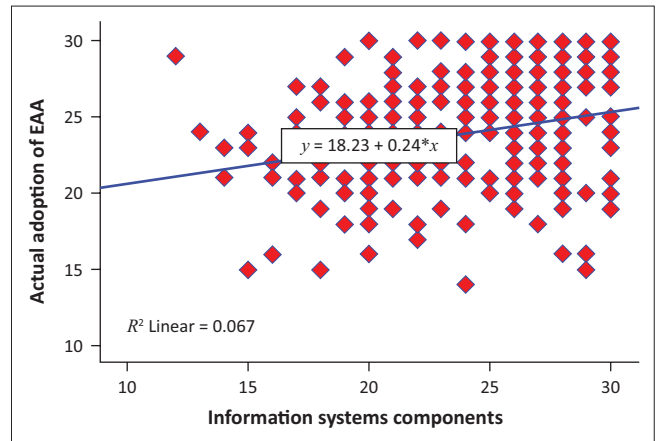
Pearson coefficients on information systems and actual adoption of enterprise application architecture

Table 3 presents the coefficient results for ISCs and the actual adoption of EAA. The *t*-test is considered for testing as both samples have similar values in the mean.

For n conditions where the predicted $\hat{Y}$ consists of actual adoption of EAA and ISCs with the score $= 18.235 + 0.235x$, the *t*-test shows that the $\hat{Y}$ constant $a = 0.235$ and the $\hat{Y}$ constant $b = 18.235$ are significantly different from zero. The independent *t*-test could be used to determine the confidence interval of the coefficient, in case the 95% confidence interval for the *t*-test is [15.029, 4.718].

Linear regression on information systems and actual adoption of enterprise application architecture

Figure 4 summarises different characters on the results for $\hat{Y}$ = actual adoption of EAA, where $a = y$ -axis intercept, $b = +$ slope and x -axis intercept as ISCs. The R^2 value is 0.101 and



EAA, enterprise application architecture.

FIGURE 4: Linear regression model on information systems components and actual adoption of EAA slope (+0.24) of good results gives the average variation in the y variable (in this case, actual adoption of EAA) for a variation in the x variable (information systems components) on one unit, where $R^2 = 0.067$.

the variances are being accounted for in this scatter plot from the independent variable, ISCs.

The data reported here seem to encourage speculation related to a linear regression model: (1) the linearity projecting the relationship between ISCs and the mean of actual acceptability of EAA is linear; (2) homoscedasticity indicates that the variance of the residual is the same for each significance of ISCs; (3) independent projects in the observations that are independent of each other; (4) normality representing a fixed value as ISCs, the actual assumption of linear regression is normally distributed. In linear regression, $\hat{Y} = 18.23 + 0.24x$. The slope of +0.24 brings the same increase in $\hat{Y}$. The $R^2 = 0.067$ indicates that the level of variation in the prognostic variable could be described by variation in the independent variables. Moreover, the R^2 is converted to r as $\sqrt{0.067} = 0.258$, which is ≈ 0.260 , as confirmed in Table 1 for Pearson's correlation coefficients. This endorses that the model is adequate with a positive slope and the model is of a positive fit.

Limitations

Whilst this article delivers much-needed realistic evidence and analysis, the adoption of EAA in SMEs for SCM has some limitations. Firstly, the article relies on primary data collection, which is costly and time-consuming. In some instances, there were increased chances of distortions and high standard deviations, which could jeopardise the reliability of data, which in turn limit the depth of the analysis. Secondly, given the irregular nature of SMEs' growth, online could be a perfect deterrent on whether SMEs are using basic technology. Thirdly, no technological SMEs are eliminated in the scope of EAA adoption. Indeed, the results indicated differences according to the particular measurements of ISCs availability (i.e., TSSs, MISs, ISG, DSSs, ESSs, KMSs and WAA), and scholars are encouraged to consider imitations as singular measures. How to advocate for the adoption of EAA might respond to the complexity of challenges that are directly linked with the design, algorithms, and implementations of EAA for SCM in SMEs.

Conclusions and recommendations

This article explored one of the most popular sanctuary concepts for adopting EAA for SCM in SMEs. The development of the introduction of EAA is guided by the theory of TPB (Fishbein 1967). In addition, the conceptual review conducted exploration across TSSs, MISs, ISGs, DSSs, ESSs, KMSs and WAA. According to the researcher, the main determinants for the adoption of EAA will be the concept of dynamic possibilities, infrastructure as a service, platform as a service and software as a service. To summarise the analysis of the results, the assumption of EAA for SCM was performed using a linear regression, testing the dependent variable (actual assumption of EAA) and the independent variable (ISCs). An implication of these results is that both ISCs and the adoption of EAA could be considered when it comes to a successful SCM within SMEs. There is no doubt that the underlying foundation for successful EAA adoption rests on three dimensions: (1) WAA, which defines whether the application meets technical and business requirements; (2) scaling, rebuilding and optimising the product for better performance and security; and (3) architectural design, which requires a thorough understanding of the product and close collaboration between business and engineering departments.

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Competing interests

The author declares that there are no financial or personal gains that may have improperly influenced him in writing this article, rather for providing insight into SMEs' adoption of EAA for SCM, developing framework theory and linking with appropriate methods used in research.

Author's contributions

The manuscript is written solely by the author. The author used a formal structure that included abstract, introduction, literature review, theoretical review, methodology, questionnaire development, stability and diagnostic test. Last but not least, the research findings included Pearson's correlations, ANOVA, Pearson's coefficient and linear regression.

Ethical considerations

Turfloop Research Ethics Committee (TREC) registered with the National Health Research Ethics Council approved this research study (clearance no. REC-0310111-031). Prior to the collection of primary data, participants were requested to

sign a consent form for their permission, stating that their participation is voluntary and that their feedback will be treated with confidentiality and anonymity

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Data availability

The data that support the findings of this study are available from the author upon on reasonable request (K.X.T.). The data are not publicly available because of restrictions on confidentiality stated in ethical considerations, as the questionnaire contains the personal information of the respondents and that could compromise the privacy of research participants.

Disclaimer

The author accomplished this research article in his personal capacity. The thoughts articulated in this article are the author's own and do not reflect the views of the Turfloop Research Ethics Committee (TREC) registered with the National Health Research Ethics Council and the University of Limpopo.

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Appendix starts on the next page →

Appendix A: Questionnaire

The questionnaire is an excerpt from the MCom dissertation at the University of Limpopo, under the Faculty of Management and Law, School of Economics and the Department of Business Administration.

Information System Components

TABLE 1-A1: Please indicate your agreement with the following statements about the information System Components of your enterprise for new information systems such as Enterprise Application Architecture* (See bottom page).

Sigma Notations	Please tick an appropriate box (✓) from 3.1 to 3.6.	Not at all	NO (2)	Moderate level (3)	Yes (4)	Definitely (5)
1)	Does the enterprise have a way of making payment on-line?	(1)	(2)	(3)	(4)	(5)
2)	Does the enterprise have way of managing information online?	(1)	(2)	(3)	(4)	(5)
3)	Does the enterprise have information controlling measures?	(1)	(2)	(3)	(4)	(5)
4)	Does the enterprise have a system that support their decisions?	(1)	(2)	(3)	(4)	(5)
5)	Does the enterprise have the system that support the owner's duties?	(1)	(2)	(3)	(4)	(5)
6)	Does the owner of the enterprise have knowledge about information systems?	(1)	(2)	(3)	(4)	(5)
7)	Does the enterprise use internet and network connectivity?	(1)	(2)	(3)	(4)	(5)

Source: Author Conceptualisation, MCom Dissertation 2021.

Enterprise Application Architecture (EAA) is a system wherein application software is interconnected in such a way that new processes are easily integrated with existing components

Section E: Actual Adoption of Enterprise Application Architecture

TABLE 1-A2: Please indicate your agreement with the following statements for actual adoption of information systems such as Enterprise Application Architecture* (See bottom page).

Sigma Notations	Please tick an appropriate box (✓), from 7.1 to 7.3.	Strongly Disagree(1)	Disagree (2)	Moderate (3)	Agree (4)	Strongly Agree (5)
1)	Information Technology simplify my day-to-day activities.	(1)	(2)	(3)	(4)	(5)
2)	Information Technology highlight technical errors for me.	(1)	(2)	(3)	(4)	(5)
3)	It makes workflow straightforward.	(1)	(2)	(3)	(4)	(5)
4)	Information Technology improves my job satisfaction.	(1)	(2)	(3)	(4)	(5)
5)	Information Technology support all aspect of my job requirement.	(1)	(2)	(3)	(4)	(5)
6)	Information Technology allows me to accomplish more work than in manual process.	(1)	(2)	(3)	(4)	(5)

Source: Author Conceptualisation, MCom Dissertation 2021.

Enterprise Application Architecture (EAA) is a system wherein application software is interconnected in such a way that new processes are easily integrated with existing components