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Enterprise Systems Adaptability and its Role to Determine Organisation Sustainability and Resilience: A Systematic Literature Review

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Abstract

The business environment can be unpredictable and unstable. In order to not only survive but also maintain their competitive advantage, organisations must be sustainable (able to operate long-term), resilient and adaptable. They need business solutions that will satisfy their needs and achieve their targets in a context of change over a long period. Most organisations invest heavily in enterprise systems (ESs) as a critical means to execute business processes, achieve goals, and increase competitiveness through the use of data and technology. Given this investment, it is important to examine how ESs contribute to organisational sustainability and resilience and determine how essential these systems are to be adaptable by design. An adaptable ES could be altered as needed and save the organisation from the threat of a significant failure or the need for a complete replacement of the ES to respond to any shift in the business environment. However, this systematic literature review suggests that research into ES adaptability lacks an assessment of the role it could play in enhancing organisational sustainability and resilience and proposes that such inquiry be made.

Keywords: Enterprise system adaptability, resilience, sustainability, adaptability, enterprise system

Introduction

Organisations are under constant pressure to sustain their competitive advantage in dynamic environments and competitive markets. Many organisations worldwide, in both private and public sectors of all sizes and industrial domains, rely on enterprise systems (ESs) to run their businesses efficiently and effectively and gain a sustainable competitive advantage (Hong and Kim, 2002). These organisations treat the implementation of an ES as a long-term investment for which they are expecting a sustainable business value in return (Gronau, 2015).

Because advances in science and technology drive rapid changes in the current business environment, adaptability has become an increasingly valued feature of enterprise systems. Several studies have made a case for designing systems for adaptability (Zhu et al., 2016; Engel and Browning, 2008; and Kissel et al., 2012). It has been argued that the use of an adaptable ES, one that can frequently adapt to changes and keep pace with rapidly evolving technology and markets, can sustain an organisation’s long-term

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profitability in a dynamic environment (Fricke and Schulz, 2005). Researchers contend that the business value returned from implementing an adaptable ES would be longer-lived, as such a system would be able to support changing business processes (Bemthuis et al., 2020, Liu et al., 2019; Dzhengiz, 2020). A non-adaptable ES is, in fact, unlikely to provide a lasting solution for an organisation because requirements are bound to change during the life cycle of the system. Indeed, studies have found that a lack of adaptability, resiliency and editability limit the sustainability of an ES (Mann et al., 2017). Studies have also provided evidence that failing to manage and adapt an ES to changes in requirements is a main contributor to both system failure, specifically, and a decline in competitiveness, generally (Jayatilleke and Lai, 2018). Therefore, having an adaptable ES would undoubtedly improve organisational sustainability and resilience.

Both sustainability and resilience are critical to an organisation (Fahimnia et al., 2019; Annarelli et al., 2020; Zeng et al., 2020; Peko et al., 2014; Weichhart et al., 2016; Kasarda et al., 2007). However, little is known about the specific role that ES adaptability plays in the determination of these qualities. This study aims to illuminate this gap and open the window for further research and investigation into ES adaptability, sustainability and resilience by conducting a systematic literature review.

This paper begins with a background section that defines the main relevant concepts. A description of the research methodology and the results follow. After a discussion section, the paper concludes with contributions, limitations, and suggestions for future research.

Background

The Enterprise System (ES)

Taking into consideration the development of ESs, as described in a number of studies (Romero and Vernadat, 2016; Hurbean and Fotache, 2014; Da Xu, 2011; Elragal and Haddara, 2012; Møller, 2005), as well as the contemporary use of ESs, the following comprehensive definition was formulated for this study: ‘An enterprise system is any software system that executes an organisation’s business process through the use of data and technology to achieve certain goals and enhance the competitive advantage of the organisation.’

In addition to and in line with the definition presented by Romero and Vernadat (2016), for this study, ESs are also to be understood as socio-technical systems that involve people, software, hardware, processes and data. The objective of an ES, as a socio-technical system, is to efficiently and effectively conduct business processes and information flow (Hallikainen et al., 2009).

Enterprise System Adaptability

Although the word ‘adaptability’ can be interpreted in many ways (Weibelzahl et al., 2020), the core assumption is if something is ‘adaptable’, it is ‘changeable’. From a systems-engineering perspective, as a non-functional property of system design, ‘adaptability’ can be seen as ‘the degree to which a product or system can effectively and efficiently be adapted for different or evolving hardware, software or other operational or usage environments’ (ISO/IEC25010:2011, 2011). ES adaptability can then be understood as the ability of the enterprise system to be adapted to accommodate changes in the requirements or environment of its user(s). The aim of ES adaptability in this context is for the system to be able to be used responsively and provide different services as needs emerge, in a relatively short time, with less effort and at a low cost.

Organisational Sustainability

The United Nations Conference on the Human Environment was the first to establish the notion of Sustainable Development, in 1972 (Keeble, 1988). The committee defined sustainable development as that which ‘meets the needs of the present without compromising the ability of future generations to meet their
own needs.’ (Keeble, 1988). Since then, interest in and awareness of sustainability as an expression of long-term social, economic, cultural, environmental and organisational viability has grown. Generally speaking, an organisation that aims for organisational sustainability is believed to be focused on both its own ability to survive as well as its ability to benefit society and the environment. Many organisations all around the globe have begun prioritise sustainability in their internal business processes, external stakeholder and investor interactions and consumer value propositions (Fiksel, 2006). According to Fiksel (2003), a sustainable organisation is one that ‘continues to grow and adapt in order to meet the needs and expectations of its shareholders and stakeholders.’ Fiskel sees the ES as ‘a component of the overall socio-economic system’ that influences the sustainability of an organisation’s competitive advantage. In this context, a ‘sustainable competitive advantage’ is ‘long-term benefit [that results from] implementing some unique value-creating strategy which competitors do not implement simultaneously, along with the inability to duplicate the benefits of this strategy’ (Kim et al., 2011).

Organisational Resilience

The application of the term ‘resilience’ to systems was introduced in 1973 by Holling, in his landmark study ‘Resilience and Stability of Ecological Systems’, to describe the ability of a system to respond to and recover from a ‘perturbation’ (Holling, 1973). Since then, the term has been used to describe systems in a broad range of areas, including ecology, metallurgy, individual and organisational psychology, supply chain management, strategic management and safety engineering (Bhamra et al., 2011; Aghazadeh Ardebili and Padoano, 2020). Regardless of the setting, this idea of resilience is strongly connected to the return to a stable state after a disruption (Espiner et al., 2017).

From an organisational perspective, resilience is the ‘capability to adapt to unanticipated shocks and learn after they become manifest’ (Bhamra et al., 2011). Rice and Caniato (2003), explained that ‘resilience is widely used to characterise an organisation’s ability to react to an unexpected disruption’. More particularly, in the business context, organisational resilience has been seen as ‘the capacity for an enterprise to survive, adapt, and grow in the face of turbulent change.’ (Fiksel, 2006). Organisations tend to develop resilience over time, as they encounter, respond to and learn from immediate and unexpected challenges to their functional operations. The extent of the resilience of an organisation will depend upon its capability and availability of resources.

Methodology

For this study, a systematic literature review (SLR) has been conducted to examine the availability and extent of research into the role ES adaptability plays in determining the organisational sustainability and overall resilience of an organisation. This approach was selected as an effective means of summarising the existing evidence-based literature in a specific domain (Kitchenham, 2004). According to Grant and Booth (2009), an SLR combines the strengths of critical review with a comprehensive and exhaustive search process on a topic area.

Search Strategy

The systematic review guidelines defined by Kitchenham et al. (2010) for software engineering researchers were used to conduct the SLR for this study. The clear and systematic procedures set out in these guidelines aim to ensure that the literature has been reviewed in an objective manner and that all relevant material has been covered. To obtain useful and relevant results, we first conducted a preliminary literature review to utilise the search keywords and database. This enabled us to both find the most relevant databases systematically (rather than randomly) and to confirm our set of selected keywords.

The selected databases used were Scopus, IEEE, ScienceDirect and Wiley Online Library. These databases are believed to be academically reliable and are trusted to cover high-impact journals and conferences and include high-quality academic papers. They are considered to be among the largest abstract and citation databases for peer-reviewed literature. The search terms were ‘enterprise system’, ‘adaptability’,
‘sustainability’ and ‘resilience’; these terms were elaborated upon by the use of synonyms and similar words. All synonyms and similar words were connected with the conjunction ‘OR’.

Table 1 displays the considered keywords and searches string. Since each database has its own valid syntax for the search string, we had to construct and modify each search term with appropriate wild card characters to fit the requirements for each selected database.

<table>
<thead>
<tr>
<th>Keywords</th>
<th>Search String</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enterprise system,</td>
<td>TITLE-ABS-KEY (‘enterprise system’ OR ‘enterprise information system’)</td>
</tr>
<tr>
<td>adaptability,</td>
<td>AND TITLE-ABS-KEY (adaptab*) AND TITLE-ABS-KEY (resilien*) OR</td>
</tr>
<tr>
<td>resilience,</td>
<td>TITLE-ABS-KEY (sustainab*)</td>
</tr>
<tr>
<td>sustainability</td>
<td></td>
</tr>
</tbody>
</table>

Table 1. Search String

**Data Collection**

To identify the relevant studies, all papers with the key terms related to the aim of the study were included, except:

1) Non-English papers
2) Duplicate papers
3) Non-peer-reviewed articles
4) Other papers such as: editorials, unpublished papers, opinion pieces, panel discussions, master theses, summaries of tutorials, technical reports, article summaries, interviews, reviews, comments, workshops and poster sessions

To obtain a comprehensive overview, the search was not limited to a specific time frame. Papers with key terms in their titles, keywords or abstracts were downloaded. Then, the abstract for each paper was examined. Only the ones deemed relevant to the purpose of this study were kept, resulting in 101 studies. This process of examining the full text of the 101 papers identified only 39 relevant papers. The selection criteria then further excluded 9 papers. Since these papers had already been reviewed, there was no need to apply additional quality criteria.

Ultimately, 30 studies were deemed to have met the pre-determined criteria. Figure 1 explains the search process in detail.
Results

The conducted SLR yielded 30 studies for analysis. Figure 2 displays the distribution of the years over which the studies were published. While extracting relevant information from those studies, particular attention was paid to research aim(s) and objectives, research methodology, results, practical and theoretical implications and limitations. After extracting the items of interest, the evidence derived from the 30 studies was collated, summarised, organised and compared. Summary tables were used to document the results of the qualitative (non-meta-analysis or meta-synthesis) systematic literature review. Table 2 summarises the characteristics of the included studies, prioritising the following elements: authors and publication years, aim(s) and/or objectives, and research focus.
<table>
<thead>
<tr>
<th>Authors and publication years</th>
<th>Aim(s) and/or objectives</th>
<th>Research focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Negri et al., 2021</td>
<td>To understand the concepts of resilience and sustainability in supply chains</td>
<td>Integration between resilience and sustainability</td>
</tr>
<tr>
<td>2 Espiner et al., 2017</td>
<td>To provide a conceptual model to discuss the relationship between resilience and sustainability in tourism</td>
<td>Integration between resilience and sustainability</td>
</tr>
<tr>
<td>3 Aghazadeh Ardebili and Padoano, 2020</td>
<td>To study the concepts of resilience and sustainability in group decision-making</td>
<td>Integration between resilience and sustainability</td>
</tr>
<tr>
<td>4 Weichhart et al., 2016</td>
<td>To discuss the challenges and development of enterprise models for smart, sensing and sustainable enterprise</td>
<td>ES sustainability</td>
</tr>
<tr>
<td>5 Chun-Ping et al., 2007</td>
<td>To discuss the adaptability of ESs in order to determine the sustainable development of an enterprise</td>
<td>ES adaptability</td>
</tr>
<tr>
<td>6 Liu et al., 2019</td>
<td>To propose a new model for the adaptability of inter-organisational information systems</td>
<td>ES adaptability</td>
</tr>
<tr>
<td>7 Andresen and Gronau, 2005</td>
<td>To provide quantitative models for designing and evaluating the value of architecture adaptability</td>
<td>Systems adaptability</td>
</tr>
<tr>
<td>8 Liu and Wang, 2005</td>
<td>To develop a structural adaptability evaluation technique to aid in architectural improvement and decision-making when selecting amongst candidate designs.</td>
<td>ES adaptability</td>
</tr>
<tr>
<td>9 Xue, 2013</td>
<td>To propose a method for evaluating ES adaptability</td>
<td>ES adaptability</td>
</tr>
<tr>
<td>10 Reinecke et al., 2010</td>
<td>To propose a framework for evaluating the adaptivity of a system</td>
<td>ES adaptability</td>
</tr>
<tr>
<td></td>
<td>Authors</td>
<td>Objective</td>
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<tr>
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</tr>
<tr>
<td>11</td>
<td>Okanga and Groenewald, 2019</td>
<td>To utilise new information collection and assimilation techniques to improve the absorptive and adaptive capacities of an organisation</td>
</tr>
<tr>
<td>12</td>
<td>Teece, 2007</td>
<td>To discuss the ‘dynamic capabilities framework’, which emphasises organisational and management competencies that might enable a business to gain and then sustain a competitive advantage</td>
</tr>
<tr>
<td>13</td>
<td>Fricke and Schulz, 2005</td>
<td>To introduce the concept ‘design for changeability’, which includes the aspects of robustness, flexibility, agility and adaptability</td>
</tr>
<tr>
<td>14</td>
<td>Zhu et al., 2016</td>
<td>To analyse and understand the concept of ‘mission-based adaptability’</td>
</tr>
<tr>
<td>15</td>
<td>Zeng et al., 2020</td>
<td>To investigate the role of information systems in the sustainable development of an organisation</td>
</tr>
<tr>
<td>16</td>
<td>Kim et al., 2011</td>
<td>To understand the impact of sustainable competitive advantage on marketing strategy and employment brand equity</td>
</tr>
<tr>
<td>17</td>
<td>Watson et al., 2010</td>
<td>To provide ways for the information systems community to engage in the development of environmentally sustainable business practices</td>
</tr>
<tr>
<td>18</td>
<td>Annarelli et al., 2020</td>
<td>To present and evaluate an assessment methodology based on a framework that integrates important static and dynamic features of organisations as resilient systems and relates these features to service quality preservation after disruptions</td>
</tr>
<tr>
<td>19</td>
<td>Annarelli and Nonino, 2016</td>
<td>To investigate the specific research domains of organizational resilience and its strategic and operational management</td>
</tr>
<tr>
<td>20</td>
<td>Le Dinh et al., 2021</td>
<td>To improve organisational resilience</td>
</tr>
<tr>
<td>21</td>
<td>Bae et al., 2020</td>
<td>To identify the factors that have an influence on organisational resilience</td>
</tr>
<tr>
<td>22</td>
<td>Ignatiadis and Nandhakumar, 2007</td>
<td>To investigate the impact of ESs on organisational resilience</td>
</tr>
<tr>
<td>23</td>
<td>Mousa et al., 2020</td>
<td>To explore the impact of organisational learning on the level of organisational resilience</td>
</tr>
<tr>
<td>24</td>
<td>Jnitova et al. (2020)</td>
<td>To apply systems thinking to organisations to engineer resilient systems</td>
</tr>
<tr>
<td>25</td>
<td>Bemthuis et al., 2020</td>
<td>To propose a reference architecture for the detection and monitoring of emergent behaviours in organisations in order to achieve resilience</td>
</tr>
</tbody>
</table>
Table 1. Characteristics of included studies

<table>
<thead>
<tr>
<th></th>
<th>Study Reference</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td>Fiksel (2006)</td>
<td>To call for the design of resilient and sustainable systems</td>
</tr>
<tr>
<td>27</td>
<td>Borekc et al., 2020</td>
<td>To evaluate the workarounds in system implementations and post-implementations, including perspectives on different levels of workplace resilience.</td>
</tr>
<tr>
<td>28</td>
<td>Kasarda et al., 2007</td>
<td>To discuss the design concepts for adaptation to achieve advanced sustainable designs</td>
</tr>
<tr>
<td>29</td>
<td>Wang et al., 2021</td>
<td>To develop a systematic model-based integration of sustainable supply chain resilience</td>
</tr>
<tr>
<td>30</td>
<td>Ansari and Kant, 2017</td>
<td>To review and analyse the existing frameworks for sustainable supply chain management</td>
</tr>
</tbody>
</table>

The summaries in the above table of studies identified in the SLR reveal, unsurprisingly, that research into ES adaptability, organisational sustainability and organisational resilience exists. However, the goal of this study is to examine the relationship between these subjects. With respect to this relationship, analysis of the 30 studies produced four themes.

1) ES Adaptability and its Evaluation

Multiple studies focused solely on ES adaptability (Chun-Ping et al., 2007; Liu et al., 2019; Andresen and Gronau, 2005); others aimed to evaluate ES adaptability (Liu and Wang, 2005; Xue, 2013; Reinecke et al., 2010). One discussed the development of sustainable ESs and addressed social, environmental, economic, and ethical considerations (Weichhart et al., 2016). More relevant to this study, Okanga and Groenewald (2019) investigated how an ES might be optimised to collect, assimilate and utilise new information to improve the absorptive and adaptive capacities of an organisation (Okanga and Groenewald, 2019). These academics found that the information generated through the interactive interface of different ES components can be utilised to create advantages that leverage the survival and sustainability of an organisation in the context of the unfolding market and industrial trends (Okanga and Groenewald, 2019). A number of other studies noted that the extent to which an organisation can modify its capabilities to respond to emerging industry and market trends is critical to its continuity and sustainability (Teece, 2007; Fricke and Schulz, 2005; Zhu et al., 2016).

Kim et al. (2011) emphasised the importance of sustainable competitive advantage to the long-term success of an organisation. Directly addressing the role of information systems in the sustainable development of an organisation, the study conducted by Zeng et al. (2020) revealed that the synergy between the ES and other resources within the organisation improves the sustainability of an organisation’s competitiveness. The findings of this study suggest that sustainability in the information system discipline can be employed in three dimensions: sustainability of competitive advantage, social sustainability and environmental sustainability. In a related study, Watson et al. (2010) focused on how ESs have contributed to solving environmental issues and problems in human society.

Resilience is mentioned in the study conducted by Borekc et al. (2020), in which the researchers undertook a critical assessment of ES workarounds in order to determine whether they are considered to enhance or hinder resilience. The authors sought to understand the nature of the workarounds with respect to aspects including ES resilience and organisational resilience. The assessment of concepts similar to resilience, such as adaptability, flexibility and agility, were integrated into their research. The study findings show that workaround solutions can be considered resilience-enhancers in the short run, when they are used to solve...
systemic issues and prevent system breakdowns, and in the long run, if they also inspire positive change in organisational dynamics.

2) Integration Between Resilience and Sustainability

A number of the studies above focused on the integration between resilience and sustainability, including those conducted by Negri et al. (2021), Espiner et al. (2017) and Aghazadeh Ardebili and Padoano (2020). Particularly relevant to this study is research by Fiksel (2006), who examined the development of resilient and sustainable systems. Fiskel emphasised the need for a better understanding of complex systems such as ESs and their adaptability during disruption events. The author admits that the process of developing resilient and sustainable systems is complex and challenging, and he believes that a new way is needed to make the most of the relationships and the dynamic behaviours that characterise these highly complex systems. As a result, he proposes a design protocol that involves defining system function and boundaries, identifying requirements, selecting appropriate technologies, developing a system design, assessing performance and proposing a practical method for system deployment.

Several studies analysed and discussed the intersection of supply chain sustainability and resilience (Negri et al., 2021; Wang et al., 2021; Ansari and Kant, 2017). According to Wang et al. (2021), there is a high significance between technological integration and supply chain resilience and sustainability. Conducted during the COVID-19 pandemic, their research revealed the importance of the integration of technology to the development of supply chain resilience and sustainability.

3) Organisational Resilience and Adaptability

A study conducted by Annarelli et al. (2020) investigated the importance of organisational resilience to a company’s ability to face increased turbulence in markets and industries. The concept of ‘organisational resilience’ in this 2020 study was defined in previous research as ‘the organization’s ability to face disruptions and unexpected events thanks to the strategic awareness and a linked operational management of internal and external shocks’ (Annarelli and Nonino, 2016). In their later study, Annarelli et al. (2020), classified resilience into two types: ‘static resilience’, which relates to the minimisation of threats; and ‘dynamic resilience’, which relates to the effective management of accidents and unforeseen events. In addition, their study gives suggestions to those trying to configure organisations as resilient systems. Among these suggestions, adaptability, as the ability to adapt to changes, was considered to be key to building resilience and ensuring service quality, because an adaptable organisation can cope with environmental changes and maintain operations under almost all conditions.

Another study linking adaptation and resilience was conducted by Le Dinh et al. (2021). These researchers investigated the support given to service organisations to improve organisational resilience by revising and adapting their business services in a consistent manner. The study proposed a conceptual framework based on the service science perspective that could be used by service organisations to adapt their business services and systems. The researchers believe that their proposed framework is one of the first to address the organisational resilience of service organisations through coherent stages of adaptation.

One could argue that the work of Mousa et al. (2020), which explored the impact of organisational learning on the level of organisational resilience, also links adaptation to resilience. Their findings demonstrate that organisational learning, which could result in the implementation of changes, has a statistically significant impact on academics’ organisational resilience.

The impact of ESs, in particular, on organisational control and resilience was explored by Ignatiadis and Nandhakumar (2007). The findings of their study suggest that, while the implementation of an ES produces power differentials that help to increase control in the organisation, ESs can drive a loss of control if not managed correctly. That is to say, if not handled effectively, an excessive centralisation of control and information associated with the use of an ES can actually reduce organisational resilience.
4) Design for Adaptability and Resilience

Kasarda et al. (2007) called for ‘design for adaptability’ (DFAD) as a methodology for designing sustainable design and technology. The DFAD methodology takes into consideration the fact that changes in performance requirements for a given product might be influenced by physical, cultural, environmental and/or economic factors, among others. The DFAD methodology applies control system modelling, analysis and product development design to guide the design of adaptable products with longer useful lives. Other researchers (Bemthuis et al., 2020) called for the design of ‘resilient enterprises’. They suggest the use of a reference enterprise architecture for detecting and monitoring emergent behaviours in businesses.

After conducting a thorough study of the literature on enterprise resilience, Jnitova et al. (2020), observed variances in terminology and a lack of clarity among academics on the concept of resilience attributes. Their analysis presented the nine attributes that featured most prominently in the articles they examined, some of which focused on business systems: 1-flexibility; 2-agility; 3-adaptive capacity; 4-adaptability; 5-robustness; 6-vulnerability reduction; 7-redundancy; 8-recovery/restorative capacity; and 9-efficiency. In addition, Bae et al. (2020) suggested that emergency response organisations follow a sequence of respond, monitor, learn and anticipate to develop resilience. Such a cycle could be seen as a process of adaptation.

Discussion

The literature analysis on the subjects of enterprise systems adaptability, organisational resilience and organisational sustainability revealed that these subjects were more generally investigated in isolation than in combination. Furthermore, the evidence from this study suggests that research has tended to focus on organisational sustainability and resilience from wild perspectives other than ES adaptability. For example, Negri et al. (2021), Wang et al. (2021) and Ansari and Kant (2017) discussed the intersection of resilience and supply chain sustainability. Very few studies investigated the relationship between ES adaptability itself and sustainability and/or resilience.

In general, the concept of organisational resilience has been examined and discussed more than the concept of organisational sustainability. A few studies, such as those conducted by Ignatiadis and Nandhakumar (2007) and Annarelli et al. (2020), investigated the impact of ESs on organisational resilience. None of the studies identified by our search strategy investigated the direct impact of ESs on organisational sustainability. Further studies are needed to fill this gap.

Having an adaptable ES is widely believed to be important for an organisation to manage the uncertainties in its environment (to be resilient) and continue providing the intended services over a long term (and be sustainable). Many researchers have recognised the importance of designing adaptable ESs and the need to evaluate the adaptability of a given design, including Kasarda et al. (2007), Chun-Ping et al. (2007), Liu et al. (2019) and Andresen and Gronau (2005). However, not much attention has been paid to identifying the role that ES adaptability plays in determining the organisational resilience and sustainability of an organisation. If adaptability is found to be key to such resilience and sustainability, it will become important to pinpoint ways to assess and benchmark these three qualities in the ES design process.

Conclusion

It is widely held that organisational sustainability and resilience are critical to an organisation’s survival in uncertain business environments and that well-implemented ESs facilitate long-term competitive advantages. However, no consideration of the impact of ES adaptability on the organisational resilience and sustainability of an organisation was found in the systematic review of the scientific literature conducted in this study. The few studies that addressed the impact an ES can have on organisational resilience and sustainability either lacked systematic empirical research or failed to give independent attention to the role of ES adaptability. In addition, the review showed that studies focusing on organisational sustainability and resilience far outnumber those on ES adaptability. Clearly, further research is needed to assess the impact of ES adaptability on factors equally key to the survival of a business: sustainability and resilience.
The study is limited by the databases used to identify sources: Scopus, IEEE, ScienceDirect and Wiley Online Library. It is also limited by the key terms defined. Although these databases are believed to be comprehensive credited databases, any relevant studies excluded from these databases would have been overlooked. For future work, the scope of the research can be broadened to conduct longitudinal studies covering a greater number of databases and incorporating a wider range of keywords.

REFERENCES


