

# A Contingent Perspective on the Development of e-business Tools and Performance: A Review

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**ABSTRACT**—*The literature has widely recognized the influence of e-business tools on business and operational performance. Some recent studies, however, suggested that researchers need to focus on exploring specific conditions that enable organizations to effectively translate their investment in developing e-business tools and practices into positive business performance and achieve up-normal return on investment. Using the contingency perspective of the firm, this paper argues that the link between e-business practices and organizational performance is influenced to a large extent by the internal and external environment within which an organization operates. That is, e-business tools and practices does not per se lead to positive performance and rather the effectiveness of these tools/practices will improve if certain internal and external factors are satisfied. This theoretical believe is discussed, theoretically, in this paper using findings of previous studies on the relationship between e-business and performance. Some theoretical and practical implications are highlighted at the end of the paper to provide researchers and decision makes new insights on how and/or when e- business tools can lead to good performance.*

**Keywords**— e-business tools/practices; organizational performance; contingency theory

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## 1. INTRODUCTION

The huge and persistent development in technology scaled by the ongoing business competition, encouraged, and sometime forced, managers to transform their organizations. EB (EB) was one of the most important modes of operations that existing organizations have used over the past few decades to enable them compete more effectively [52, 66, 73, 76]. EB (Internet-based electronic business) describes how business enterprises conduct business, operations, supply chain and other value added activities such as selling, buying, logistics, customer services, marketing using the internet technologies [1],[2].

With the new innovative technologies, new business approaches are evolving which demand all business to assess the potential of these electronic-based business approaches in making their business more successful and in reducing the risks of business failure caused by these EB tools. Such risks may include managing security, maintaining customer and other stakeholders' privacy and delivering a satisfactory service quality. Because of the increasing recognition of EB adoption influence on business performance [64,74,77], both researchers and practitioners from different disciplines including Information Technology/Systems (IT/IS) [58], operations and supply chain management (SCM) [60, 63], marketing [62, 71, 75] and strategic management [56, 59, 72] have shown growing interest on ways to convert EB investment to good results [48, 68]. The potentials for new communication and business methods make EB applications interesting areas of business to be involved in.

Most EB adoption research has investigated the role of EB on performance [48, 61, 64, 74, 76, 77]. While examining the direct influence of these technologies on performance provided good contributions to the literature, what is not investigated enough in the literature is a systematic explanation of whether these business benefits of EB adoption are same for all contexts [50, 54, 68, 74]. Several studies have argued that a firm ability to manage technology-enabled changes is a foundation for effectively managing EB tools. An important reason that encouraged the current paper is that business environment and IT have changed dramatically over the past few decades and the strategies, practices, tools and technologies used over the last decades might not be applicable any more for the current business environment, and accordingly business benefits obtained by these practices, tools and technologies might differ. Although new approaches for implementing B 2 B, B 2 C, C 2 B and C 2 C business practices have emerged, there is still a lack of empirical studies examining the influence of the contextual factors on EB and performance relationship [3, 68].

There is a huge literature on the implications of EB implementation has been discussed and published in several areas of operations management and other business related fields. Given this diversity of researches and their outcomes on whether EB implementation is a good choice for organizations in order to improve their performance, a review on the

contingent factors that influence the relationship between EB practices and performance become important. To achieve this objective, in this study, a general review of the existing EB practices and performance literature from various database and journals was conducted using key several keywords such as EB tools, practices, applications, performance, contingency, moderation and mediation. Outcomes of some of the papers reviewed are listed in table 1 and 2, which reveals that the contingency perspective of EB practices and performance has not received enough empirical attention yet.

This study argues that while findings of each model developed by previous studies emphasizing the direct impact of e-business tools on performance provide some useful insights, their usefulness for examining the actual performance impacts of adopting EB tools should be further investigated using a more contingent perspective. The development and examination of new comprehensive models that are based on the contingent adoption of these tools is needed to develop our understanding of EB and performance links. Therefore, using the contingency theory perspectives, this paper examines when EB positively or negatively affects performance of enterprises. Existing literature is critically evaluated and a contingency perspective for studying the performance effects of EB is discussed based on the contingency theory of the firm.

The rest of the paper is structured as follows. After the introduction, a literature review on EB definition and benefits is provided which is followed by a discussion on the contingency theory and how it is applied into the context of EB research. Then, a list of contingency factors that were studied by previous studies and their influences on effectiveness of EB is provided. Finally, recommendations for researchers and practitioners are highlighted.

**Table 1. Main findings of previous studies in various EB fields (source: compiled by authors)**

<i>Paper</i>	<i>Constructs studied</i>	<i>Main findings</i>	<i>Journal</i>
[55]	Website quality factors and performance	Quality of the website and other EB tools affect their relative importance, which in turn influence firms' financial performance.	Decision Support Systems
[56]	Availability of qualified staff, readiness of adoption, availability of financial resources	Lack of qualified staff available to develop, implement and support firms' EB tools, and limited financial resources affect the usability and benefits of these technologies.	Strategic Change
[57]	Level of proficiency and the experience in using EB tools	The firm's proficiency in leveraging its web-based technologies positively affect its profitability outcomes. The long time and experience of adopting EB technology lead to higher profitability.	Information & Management
[58]	A portfolio of IT/IS-enabled resources (i.e. technological, human, and organizational resources)	The complementarities of EB technological, human, and organizational resources generate superior organizational performance.	Information & Management
[59]	Experience of sales force management	The EB experience of sales force management positively influence performance.	Strategic Management Journal
[60]	The EB supply chain collaboration and performance	The EB supply chain collaboration is critical to achieve higher business outcomes.	International Journal of Supply Chain Management
[61]	EB practices, innovation and performance	Innovation advantage is the crucial facet that leads to higher business performance of EB.	Competitiveness Review
[62]	E-trust between the firm, its clients and its suppliers, and performance	Organizational strategic performance largely depends on e-trust.	World Journal of Entrepreneurship, Management and Sustainable Development
[63]	The level of adopting EB tools that reply on the 4 <sup>th</sup> Industrial revolution technologies, and firms' performance	Logistics performance of EB logistics in supply chain management play a significant role in the success of EB.	Industrial Management and Data Systems
[64]	EB technologies, business competitiveness, and performance	Business competitiveness, moderates the relationship between EB technology and business performance.	International Journal of Global Business and Competitiveness
[65]	The digital market,	The performance of SMEs resulted from their	Journal of Strategic

	learning and entrepreneurial orientations	adoption of EB relies heavily on their strategic digital orientation which is combines the market, learning and entrepreneurial orientations of the firm.	Marketing
[66]	The entrepreneurs' choices and designers' research of EB technologies	The design of EB technology is crucial in promoting valuable outcomes.	Organizing for Digital Innovation
[67]	Several factors impacting the performance of reverse logistics in the context of EB	The performance outcomes of using EB applications in reverse logistics depends on eight main factors: management, employees, IT and technology, return policy and procedures/guarantee, infrastructure, organizational structure and culture, customer services/satisfaction, and quality management.	TRANSPORT
[68]	EB practices, Firms size and performance	Firm size is a critical factor to determine the business outcomes of EB adoption.	Electronic Journal of Information Systems in Developing Countries
[69]	Data conditions and performance	The consistency, completeness, and protection of the data used in the EB significantly influence company performance.	Journal of the Operational Research Society
[70]	Globalization, e-technology and firm's global supply chain success	In the EB industry, the globalization and technology us tend to critically influence the business success of global supply chain.	International Journal of Operations Research and Information Systems
[71]	E-commerce marketing capabilities, efficiencies and performance	The EB resources/capabilities–performance relationship is mediated by the marketing efficiencies.	Industrial Marketing Management
[72]	EB capabilities, the firms' strategic orientation and performance	E-business alignment with the firms' strategic orientation has positive performance outcomes for manufacturing SMEs.	Industrial Management & Data Systems
[73]	Organizational culture, intensity and performance of EB	The organizational adhocracy culture is significantly related to the intensity and performance of e-business adoption.	European Journal of Marketing
[74]	EB strategies, performance and e-collaboration capability	The impact of EB strategy on firm performance is completely mediated by e-collaboration capability.	International Journal of Information Systems and Change Management
[75]	Word of mouth, the attribute of the message, and operational performance	When considering the word-of-mouth in the EB environment, the attributes of the message sent between firms and their customers was found to the effectiveness of EB tools.	Journal of Theoretical and Applied Electronic Commerce Research
[76]	EB capability, service capability and IT-enabled collaborative advantage	The development of organizational application capabilities of EB is critical enabler to gain higher organizational performance.	Technological Forecasting & Social Change
[77]	The strategic EB approach used, effective leadership and the right planning	Better business opportunities and a significant position in the industry can be achieved by adopting the right combination of strategic EB approach and effective leadership.	TEM Journal

## 2. LITERATURE REVIEW

### 2.1 E-Business: Definition and Scope of Practices

Several terminologies and definitions were proposed to describe the process of using electronic-based business approaches for conducting business. This has partially caused by the rapid and ongoing development of technology and its applications to business [4]. Such terminologies include EB, e-commerce, e-marketing, e-procurement, e-logistics ,,etc. They consider all electronically mediated financial and non-financial transactions between an organization and its

stakeholders. They deal with the pre-sale, actual buying and selling, and post-sale activities across the supply chain, and focus on enabling electronic communication between a firm and its stakeholders which is facilitated by numerous electronic technologies [5, 66]. Although each of these labels reflect the scope of changes that should be considered within an organization and its supply chain for using e-communication, these terminologies were developed based on understanding that better services can be offered to stakeholders and new business opportunities can be obtained by a firm [55]. E- business in this paper refers to the transformation of key business processes through the use of Internet technologies, [6]. The terminology is used to reflect both the strategy and operations sides within an organization and it requires the utilization of innovative technology, Information and Communication Technologies (ICTs) in particular, throughout the whole business processes. As described by the UK's department of trade and industry (DTI), EB is understood to be the integration of all operations activities with the internal processes of a business through ICT [7].

## **2.2 Benefits of e-business adoption**

Over the last few decades, more and more managers have realized the strategic values of EB tools and seen the unique competitive advantage [66, 72] that a well-established and management EB can offer to the organization. Therefore, recently EB with its applications in business has attracted huge amount of investment across different industrial sectors. According to findings of several recent studies, many companies are intending to increase their spending on developing EB tools [27, 65], because of their believe that investment in these tools is essential to stay competitive [71, 76, 77]. For example, the Modern Materials Handling magazine reported that in 2009 the trade for SCM software alone has reached to around 6.3 billion US dollars. Not surprisingly then that managers of different types of organizations are willing to know whether it pays to adopt EB in terms of enhancing firm performance, and to know how to direct their investments to improve their market competitiveness. That is, managers are responsible to justify their expenses in developing EB tools. In academia, also several studies with various research designs and models were proposed and published examining the influence of information technology in general and the ICT in particular on firm financial performance [58, 65, 68]. Several practical, business benefits for adopting EB tools have been highlighted in the EB literature [6, 64, 66, 71, 77]. For example, new opportunities to compete more effectively in the global marketplace have been introduced by the EB for different types of organizations [51, 65, 73, 76, 79]. Such opportunities are obvious in the new approaches developed to quickly transforming information from one place to another which can be used as a competitive advantage. The internet and its applications in EB also offer critical chances for enterprises to enhance their relationship with their strategic stakeholders such as customers, suppliers [63, 74] and shareholders which in turn help to achieve stakeholder retention by providing high quality services to them. This has become even more important during the COVID-19 pandemic to overcome its challenges, which encouraged organizations of different types and their customers to show more progression in the implementation of these technologies [79]. New and more convenient ways of serving customers and dealing with suppliers are encouraged by the EB tools [64, 73]. Cost saving is also a critical benefit of using EB [57] which can be obtained through reduced cost of staffing, accessing and processing information, printing, and storing unnecessary materials, work in process and finished good. Using IT can also benefit the ethics of products safety [78]. Furthermore, increased sales from new and/or existing customers can be better achieved using e-marketing and e-sales which in turn leads to increased revenue [71, 76]. Also, using EB for online marketing reduces marketing costs, helps in brand enhancement, creating more responsive marketing, improving customer services through quick response to market needs and faster development of new products and services [71]. Doing business through the internet can also enhance the learning capabilities [65] and risk management of a firm. Additionally, cost reductions for the entire supply chain can be achieved [53] from reduced communication costs, reduced levels of inventory, quick response to market changes and reduced logistics costs. These benefits were reported in both developed and developing countries [7].

In fact, several studies argued that as the development and adoption of EB tools sometimes requires a substantial investment [27, 53, 54], a very careful attention of the return on investment is needed. As shown in tables 2, findings of previous studies on EB and performance are still inconclusive. We therefore have limited understanding of how developing EB tools improves performance and without a deeper understanding of this issue a lot of organization resources will be wasted. Because the research context is essential in determining the research objectives, methodologies used, data collected, and accordingly the findings, EB and firm performance literature call for research to explore the contingent influence of the business contexts on this topic [8, 52, 68] and evidences to support this argument are obvious. For example, the internet offers good opportunities for enterprises to maximize the benefits of ICT [53, 5879] in cheap and simple ways and enable them to reach new partners in the supply chain. However, at the same, EB in general and ICT in particular provides customers easy and cheap ways to globally search for new suppliers [72]. This reveals that both market opportunities and threats are introduced by the adoption of EB tools and thus not all enterprises firms can harness the same amount of benefits of EB adoption. This may partially happen because not all firms have got the same capabilities to transfer their investment in adoption EB tools into good return [68, 72]. Large firms, for example, tend to use a more flexible, decentralized business structure [9] and more sophisticated IT and EB tools [10]. Also, larger firms tend to be having more financial resources to fund sophisticated EB applications such as JIT systems, and accordingly higher business benefits from their IT investments [11]. Further, more international oriented enterprises tend to be more willing to adopt advanced types of EB in order to meet the growing demands of their supply chain members [70].

### **2.3 Contingency theory and e-business**

The contingency theory [12] argues that there is no specific business practice that can be called the best, rather a unique, context specific practice should be considered when developing organization practices and tools. For the context of developing and evaluating EB applications this means that there is no optimal EB tools exist for all types of organizations. However, going through the literature shows that the empirical work still uncovered the real contingent influence of EB tools on firms' performance. For example, most of the empirical work done on EB and performance were derived based on data collected from large firms of the developed countries, especially firms downstream in the SC [13] [14]. The challenges faced by small and medium enterprises (SEMs) when adopting EB varies from those faced by large firms [15, 54, 65, 68], and consequently the process and outcomes of adopting these tools may differ. This implies that more careful investigation on the applicability of these empirically validated models across other firms in different contexts is needed. Yet, the contingent characteristics of different organizations have not been fully considered by the existing studies when studying the relationship between EB tools adoption and performance.

This study emphasizes the importance of having exploratory and empirically grounded studies on how EB tools influence performance of firms in different contexts. Findings on such studies are expected to provide more realistic and practical insights on how and when it pays to invest on developing EB tools. In this study a multi-disciplinary research approach was used to review and integrate researches in business, supply chain management, purchasing and information technology management on the possible interrelationships between EB and performance of a firm, and when these relationships could be enhanced. A contingent perspective on studying these relationships was proposed based on the contingency theory of the firm. The choice of this theory was purposeful. It was chosen from among other theories because it provides deeper insights on how two factors may be interrelated instead of looking for only the direct relationship between these factors. The factors that could moderate or mediate (i.e. contingent factors) the relationships between EB and performance highlighted in this study are either explicitly or implicitly focus on factors that previous studies have shown to impact either EB tools' adoption or performance or both, reflecting different theoretical explanations.

Contingency theory studies in EB literature emphasize the importance of developing and designing specific e-business models and tools that has an appropriate level of fit with the context of adoption. For example, SCM structure for international firms varies from the one used for domestic firms and thus when designing IT applications to facilitate the SCM processes these differences need to be considered very carefully. Also, the location of the firm in the SC (i.e. downstream or upstream) will influence the complexity of EB application such as those used for location-based tracking of goods and inventory as they are manufactured and transported, which in turn can influence the benefits obtained by these tools. Some empirical evidences were found to support the contingency theory in the context of EB effectiveness (see table 3). Results of these studies should be carefully considered by individuals and organizations dealing with designing IT applications for business activities. This in turn could provide managers more practical and realistic solutions to support their decisions and enable firms to achieve their objectives.

Reviewing the literature on contextual factors influencing EB adoption and performance link shows that these factors were studied in different ways. One group of these studies (List A Table 3) has studied the influence of the contingency factors as moderator variables. In the moderation analysis researchers assume that the strength/weakness of relationship between an independent variable (A) and a dependent variable (B) will depend on a third variable called a moderator. That is, the interaction between the contingency variable and A is assumed to have stronger influence on B. For example, in a study of manufacturing firm, [30] reported that as the level of internal integration between technical and organizational activities of business systems increase the business benefits of adopting EB applications increases. Also, it was reported that in the context of the manufacturing firms, EB tools will be more effective when a firm is using differentiation strategy than for those focusing on lower-cost strategy [80]. Moreover, in another study [42] the moderating role of a purchasing function's absorptive capacity on the relationship between the use of electronic purchasing tools and purchasing performance of the manufacturing firms was empirically supported. Authors of this study argue that an e-purchasing tool may not in itself positively influence performance unless combined with absorptive capacity as a human interface to maximize its information and transactional improvement potential. Thus, among others, internal integration, EB strategy and purchasing function absorptive capacity are considered as critical moderating factors between EB and performance. Another group of studies (List B Table 2) have studied the influence of the contingency factors as mediator variables. In the mediation analysis researchers assume that the relationship between A and B is going via a third variable called a mediator. In that, the influence of A on B will not happen unless the mediator is in place. In fact, reviewing the literature revealed that these mediating-contingency studies are rare in EB literature compared to others. Among these few studies is a study conducted by Zhu et al., [1] and his friends where they found that the relationship between EB application and performance is mediated by the level of support provided by top managers. Also, SCM practices adoption within the firm was found to be a critical mediating factor between EB and performance among firms working in logistics and transportation [23]. Thus, to enhance the effectiveness of EB on performance SCM capability and support of top management must be established within the firm.

### 3. CONTEXTUAL FACTORS IN THE LITERATURE

#### 3.1. Moderation and mediation contingent factors

As shown earlier, the usefulness of some of the EB models for different types of enterprises that have been proposed by some previous studies is not clear. Thus, the current paper highlights a list of contingency factors in which e-business applications are suggested and argued to be more effective and factors that were reported to have influence on EB and performance relationship. This list is expected to encourage future research in designing EB tools that can be of a strategic value for the adopters.

**Table 2** Mixed findings of previous studies on EB adoption—performance link

Positive relationship	[19]; [20]; [21]; [22]; [49]
Negative relationship	[24]; [25]; [26]
No significant relationship	[27]; [28]

**Table 3.** example of contextual factors studied by previous studies on EB—performance link( **A-fit of contingencies as moderators**)

[29]	Level of uncertainty and risk involved in external environment, item value and frequency of purchase	These dimensions are important for the effect of IT on co-ordination costs between SC members
[30]; [31]	Strengths and complexity of supplier-buyer relationships	The effectiveness of purchase strategy (i.e. e-purchase or traditional) depend on strength of supplier relationships
[32]	Internal integration	Technical and organizational integration of business systems improve effectiveness and efficiency of
[33]; [34]; [68]	Firm characteristics	Focus domain is important
[35]	Organizational readiness	Level of Internet knowledge among non- IT professionals Adequate computer systems within the firm to access and use the Internet without major problems
[36]	EB strategy (lower-costvers. Differentiation strategies)	EB is more effective for dynamic and differentiation strategies that focus on matching current dynamic customer needs
[37]; [38]; [39]	Product characteristics and market type	Both factors have strong positive influence on effectiveness of ICT on performance
[40]; [41]	Industry Size; position of the firm in the supply chain; Complexity of the supply network	These factors partially moderated the link between e-business and performance
[42]; [43]; [44]	Competitive intensity Size; IT infrastructure	IT infrastructure is important moderator while competitive intensity is not a critical moderator
[45]; [46]	Demand unpredictability; product Turbulence	Demand unpredictability negatively influence e-business—performance while product turbulence does not
[10]	Degree of customization	Higher degree of customization enables better performance in most of the cases, depending on the complexity of operations and type of product/services offered
[44]	Absorptive capacity of a purchase function	An e-purchasing tool may not in itself positively influence performance unless combined with absorptive capacity as a human interface to maximise its information and transactional improvement potential
<b>Examples of contextual factors studied by previous studies on EB—performance link (B- fit of contingencies as mediators)</b>		
[1]	Support obtained from top management on the use of ICT	Top management support fully mediates the EB-performance link
[62]	E-trust	E-trust mediates the relationship between e-marketing orientation strategic business performance

[74]	E-collaboration capability	The impact of EB strategy on performance is fully mediated by e-collaboration capability
[23]	SCM practices such as EB for value creation	EB for value creation mediated the link between basic EB tools and SCM performance
[49]	EB (in terms of internal integration and external diffusion), organizational performance, differentiation, enterprise agility, customer relationship development and partner attraction	Non-financial performance fully mediates the relation between the external EB diffusion and organizational performance. Also, this relationship is fully mediated by differentiation and relationship development for the US firms.

#### 4. CONCLUSION AND IMPLICATIONS

Despite the growing recognition about the importance of EB in achieving higher performance, findings of previous empirical studies on this issue are inconclusive [46] (see table 1). While some studies reported a positive relationship between EB and business performance, others found negative relationship between these. This might indicate that we have limited understanding on how these factors are interrelated [51, 55] and thus further investigation in this area is needed. The lack of a proper understanding of the specific factors and conditions that drive the success of EB projects may lead to waste of resources and business failure. Accordingly, several recent EB researchers and practitioners argued for the importance of aligning drivers, practices and context of EB adoption. This paper aimed to review the literature to provide a list of contextual factors that were reported to have significant influence on the effectiveness of e-business applications and performance, and thus to systematically investigate if contextual factors have been considered enough by previous EB studies. By doing this, the paper shows the actual mechanisms that enable good outcomes from the use of ICT and other EB tools or whether the context of the study [45, 46] plays significant role in determining the outcomes of studies examined the relationship between EB practices and performance. This list could in turn provide guidance for practitioners, dealing with designing EB tools, on factors that must be considered when designing new EB applications for different contexts. It also provides suggestions for future research directions on examining new contexts where the level of fit between EB applied and the context is high. For example, future studies might examine the influence of the different stages at which the product is located in the product life cycle on the effectiveness of EB tools. Furthermore, it appears that SMEs take up of EB is different to that of large firms [65, 66, 67, 68, 72]. The implication suggests for a contingent- SMEs characteristic-based approach to determining how SMEs employ ICT- rather than a ‘one size fits all’ solution [68]. Also, reviewing the literature shows that the contextual factors examined by previous studies were examined separately without taking in account how the interaction between these factors could influence the relationship between e-business and performance. Examining the interaction of several contextual factors and its influence on issue under investigation is important to obtain a better understanding of how two factors are interrelated [47].

Despite the theoretical and practical contributions of this study, it suffers from some limitations. First, the current study emphasized the importance of considering a contingency perspective when studying the EB practices and performance relationship in general. However, since different performance measures were adopted by different articles reviewed, the various effects of the contingency factors discussed in this research on operational, business and other aspects of organizational performance have not been discussed. Also, the focus of this paper is on literature related to limited keywords in the supply chain management, logistics, operations management and other business and management related fields that tend to have their own unique complexity when using EB and ICT. Expanding the review to a broader range of keywords in other fields where EB and ICT tools are used, and analyzing a larger data from various data bases would be of a critical value to the EB body of research. The list of moderators and mediators highlighted in this study are not meant to be inclusive, and future studies are encouraged to explore other factors that have not been discussed in this paper. Further, the different research methodologies adopted by previous EB practices-performance researches might influence how the direct and indirect relationships between these factors were interpreted, but the methodological aspects of the reviewed papers were beyond the scope of the current study. Focusing on these areas of researches is expected to provide a deeper and a different understanding of how EB practices and performance are related to create the expected outcomes.

#### 5. REFERENCES

- [1] Zhu, K., Kraemer, K., & Xu, S. (2006), “The process of innovation assimilation by firms in different countries: A technology diffusion perspective on e-business”, *Management Science*, Vol. 52, No. 10, pp. 1557-1576
- [2] Li, D., Chau, P. Y. K. and Lai, F. (2010) “Market Orientation, Ownership Type, and E-Business Assimilation: Evidence from Chinese Firms”, *Decision Sciences*, Vol. 41, No.1, pp. 15-145
- [3] Nicalaou, A.I. (2001) “Interactive effects of strategic and cost management systems on managerial performance”, *Advances in Management Accounting*, Vol. 10, pp.203–225.
- [4] Mougayer, M. (1998), “E-commerce? E-business? Who e-cares?”, *Computer World* web site ([www.computerworld.com](http://www.computerworld.com)), 2 November.
- [5] Kalakota, R. and Whinston, A. (1997) *Electronic Commerce. A Manager’s Guide*. Addison- Wesley, Reading, MA.

- [6] (IBM) Snowden, D. (1997) Complex acts of knowing – paradox and descriptive self awareness. IBM Global Services, July. [www-1.ibm.com/services/files/complex.pdf](http://www-1.ibm.com/services/files/complex.pdf). ([www.ibm.com/e-business](http://www.ibm.com/e-business)),
- [7] DTI (2000) Business in the Information Age – International Benchmarking Study 2000. UK Department of Trade and Industry.
- [8] Chaffey, D., (2009) “E-business and e-commerce management: strategy, implementation and practices “, 4<sup>th</sup> Ed, Prentice Hall
- [9] Pohjola, M. (Ed.), (2001), “Information Technology, Productivity, and Economic Growth: International Evidence and Implications for Economic Development”, Oxford University Press, New York.
- [10] Boulianne, E., (2009), “A contingency framework for effective information systems design and e-business applications”, *International Journal of Information Technology and Management*, Vol. 8, No. 1, pp. 50–68
- [11] Merchant, K.A. (1981), “The design of the corporate budgeting system: influences on managerial behavior performance”, *The Accounting Review*, pp.813–827.
- [12] Fiedler, F. (1964) ‘A contingency model of leadership effectiveness’, In L. Berkowitz (Ed.). *Advances in Experimental Social Psychology*. New York: Academic Press. pp. 149-190.
- [13] Libby, T. and Waterhouse, J.H. (1996) ‘Predicting change in management accounting systems’, *Journal of Management Accounting Research*, Vol. 8, pp.137–150.
- [14] Fullerton, R.R. and McWatters, C.S. (2002) ‘The role of performance measures and incentive systems in relation to the degree of JIT implementation’, *Accounting, Organization and Society*, Vol. 27, pp.711–735.
- [15] Hawkins, R., Prencipe, A., (2000), “Business-to-Business E-Commerce in the UK: A Synthesis of Sector Report”, Department for Trade and Industry, London.
- [16] Tesar, G., Moini, H., (2001), Incipient networks as consequences of internet web site development among smaller manufacturing enterprises. Proceedings of IMP Conference, Oslo, Norway.
- [17] Blili, S., Raymond, L., (1993), “Information Technology: threats and opportunities for small and medium-sized enterprises”, *International Journal of Information Management*, Vol. 13, pp. 439–448.
- [18] Jayaram, J., Vickery, S. & Droge, C. (2000), “The effects of information system infrastructure and process improvements on supply-chain time performance”, *International Journal of Physical Distribution & Logistics Management*, Vol. 30, Nos. (3/4), pp. 314-330.
- [19] Olson, J. & Boyer, K. (2003), “Factors influencing the utilization of Internet purchasing in small organizations”, *Journal of Operations Management*, Vol. 21, No. (2), pp. 225-245.
- [20] Cagliano, R., Caniato, F. & Spina, G. (2003), “E-business strategy: how companies are shaping their supply chain through the internet”, *International Journal of Operations & Production Management*, Vol. 23, No. (10), pp. 1142-1162.
- [21] Ward, P. & Zhou, H. (2006), “Impact of information technology integration and lean/just-in time practices on lead-time performance”, *Decision Sciences*, Vol. 37, No. 2, pp. 177-203.
- [22] Zhang, X. Dirk Pieter van Donk Taco van der Vaart, (2011), “Does ICT influence supply chain management and performance?”, *International Journal of Operations & Production Management*, Vol. 31, No. 11, pp. 1215 - 1247
- [23] Narasimhan, R. & Kim, S.W. (2001), “Information system utilization strategy for supply chain integration”, *Journal of Business Logistics*, Vol. 22, No (2), pp. 51-75.
- [24] Da Silveira, G. & Cagliano, R. (2006), “The relationship between inter-organizational information systems and operations performance”, *International Journal of Operations & Production Management*, Vol.26, No. (3), pp. 232-253.
- [25] Sriram, V. & Stump, R. (2004), “Information technology investments in purchasing: an empirical investigation of communications, relationships and performance outcomes”, *Omega*, Vol. 32, No (1), pp. 41-55.
- [26] Jeffers, P.I., Muhanna, W.A. & Nault, B.R. (2008), “Information technology and process performance: an empirical investigation of the interaction between IT and non-IT resources”, *Decision Sciences*, Vol. 39, No. (4), pp. 703-735.
- [27] Garcia-Dastugue, S.J., Lambert, D.M., (2003), “Internet-enabled coordination in the supply chain”, *Industrial Marketing Management*, Vol. 32, No (3), pp. 251–263.
- [28] Kraljic, P., (1983) “Purchasing must become supply management”, *Harvard Business Review*, Sept–Oct, pp. 109–117.
- [29] van Weele, A., (2002), *Purchasing and Supply Chain Management— Analysis, Planning and Practice*. Thomson Learning, London.
- [30] Venkatraman, N., (1991). IT-Induced Business Reconfiguration. In: Scott Morton, M. (Ed.), *The Corporation of the 1990s. Information Technology and Organizational Transformation*. Oxford University Press, Oxford.
- [31] Levy, M., Powell, P., (2003) “Exploring SME Internet Adoption: towards a contingent model”, *Electronic Markets*, Vol. 13, No. (2), pp.173–181.
- [32] Levy, M., Powell, P., Yetton, P., (2001), “SMEs: aligning is and the strategic context”, *Journal of Information Technology*, Vol.16, pp.133–144.
- [33] Mehrtens, J., Cragg, P.B., Mills, A.M., (2001), “A model of Internet adoption by SMEs”, *Information & Management*, Vol.39, No. 3, pp.165–176.

- [34] Hafeez, K., Keoy, K.H.A., Zairi, M., Hanneman, R. and Koh, S.C.L. (2010), “E-supply chain operational and behavioural perspectives: an empirical study of Malaysian SMEs”, *International Journal of Production Research*, Vol.48 No. 2, pp. 525-46.
- [35] Heim, G.R. and Peng, D.X. (2010), “The impact of information technology use on plant structure, practices, and performance: an exploratory study”, *Journal of Operations Management*, Vol. 28 No. 2, pp. 144-62.
- [36] Hill, C. and Scudder, G. (2002), “The use of electronic data interchange for supply chain coordination in the food industry”, *Journal of Operations Management*, Vol. 20 No. 4, pp. 375-87.
- [37] Cagliano, R., Caniato, F. and Spina, G. (2003), “E-business strategy: how companies are shaping their supply chain through the internet”, *International Journal of Operations & Production Management*, Vol. 23 No. 10, pp. 1142-62.
- [38] Cagliano, R., Caniato, F. and Spina, G. (2006), “The linkage between supply chain integration and manufacturing improvement programs”, *International Journal of Operations & Production Management*, Vol. 26 No. 3, pp. 282-99.
- [39] Fröhlich, M. and Westbrook, R. (2002), “Demand chain management in manufacturing and services: web-based integration, drivers and performance”, *Journal of Operations Management*, Vol. 20, No. 6, pp. 729-45.
- [40] Hsu, C.C., Kannan, V.R., Tan, K.C. and Leong, G.K. (2008), “Information sharing, buyer-supplier relationships, and firm performance: a multi-region analysis”, *International Journal of Physical Distribution & Logistics Management*, Vol. 39 No. 4, pp. 296-310.
- [41] Iyer, K.N.S., Germain, R. and Claycomb, C. (2009), “B2B e-commerce supply chain integration and performance: a contingency fit perspective on the role of environment”, *Information & Management*, Vol. 46 No. 6, pp. 313-22.
- [42] Kaupi, K., Brandon, J.A, A, Ronchi, S., van Raaij, E. M., (2013) "Tools without skills: Exploring the moderating effect of absorptive capacity on the relationship between e-purchasing tools and category performance", *International Journal of Operations & Production Management*, Vol. 33, No. 7, pp.828 – 857
- [43] Ho, D.C.K., Au, K.F. and Newton, E. (2002), “Empirical research on supply chain management: a critical review and recommendations”, *International Journal of Production Research*, Vol. 40 No. 17, pp. 4415-30.
- [44] Gray, G.L. and Debreceny, R. (2002) ‘Research opportunities in electronic commerce’, in V. Arnold and S.G. Sutton(Eds.) *Researching Accounting as an Information Systems Discipline*, AAA Monograph, pp.209–230.
- [45] Fisher, J. (1995) ‘Contingency-based research on management control systems: categorization by level of complexity’, *Journal of Accounting Literature*, Vol. 14, pp.24–53.
- [46] Li D., Chau P. Y. K. and Fujun Lai, (2010) ' Market Orientation, Ownership Type, and E-Business Assimilation: Evidence from Chinese Firms', *Decision Sciences*, Vol. 41, No.1, pp. 15-145
- [47] Alshayadi, A. (2020), "Collaborative e-business efforts and firm performance", *International Journal of Productivity and Performance Management*, Vol. 71, No. 1, pp. 100-124.
- [48] Goyal, S., Sergi, B. and Esposito, M. (2019), “Literature review of emerging trends and future directions of E-commerce in global business landscape”, *World Review of Entrepreneurship Management and Sustainable Development*, Vol. 15, Nos 1-2, pp. 226-255.
- [49] Lucia-Palacios, Bordonaba-Juste, Polo-Redondo and Gr€unhagen, M. (2014), “E-business implementation and performance: analysis of mediating factors”, *Internet Research*, Vol. 24
- [50] Mora-Monge, C., Gioconda, Q., Marvin, E.G. and Joshua, M.D. (2019), “Trust, power and supply chain integration in Web-enabled supply chains”, *Supply Chain Management*, Vol. 24 No. 4, pp. 524-539.
- [51] Popa, S., Soto-Acosta, P. and Perez-Gonzalez, D. (2018), “An investigation of the effect of electronic business on financial performance of Spanish manufacturing SMEs”, *Technological Forecasting and Social Change*, Vol. 136 No. C, pp. 355-362.
- [52] Yeow, A., Soh, C. and Hansen, R. (2018), “Aligning with new digital strategy: a dynamic capabilities Approach”, *Journal of Strategic Information Systems*, Vol. 27 No. 1, pp. 43-58.
- [53] Zhu, Z. and Lin, S. (2019), “Understanding entrepreneurial perceptions in the pursuit of emerging e-business opportunities: the dimensions and drivers”, *Computers in Human Behavior*, Vol. 95, pp. 252-261.
- [54] Zhu, Z., Zhao, J. and Bush, A. (2020), “The effects of e-business processes in supply chain operations: process component and value creation mechanisms”, *International Journal of Information Management*, Vol. 50 No. 1, pp. 273-285.
- [55] Lee, Y., and Kozar, K. A. (2006). Investigating the effect of website quality on e-business success: An analytic hierarchy process (AHP) approach. *Decision Support Systems*, 42(3), 1383–1401.
- [56] Abdullah A., Brychan T., Lyndon M., Eoin P., (2018) “An investigation of the benefits and barriers of e-business adoption activities in Yemeni SMEs”, *Strategic Change*, Vol. 27, No. 3, pp. 195-208
- [57] Benitez, J.; Chen, Y.; Thompson, T.; Ajamieh, A. (2017), “Evolution of the impact of e-business technology on operational competence and firm profitability: A panel data investigation. *Information & Management*, Vol. 55, No. 1, pp. 120-130
- [58] Chen, J-L, (2021) “The synergistic effects of IT-enabled resources on organizational capabilities and firm performance”, *Information & Management*, Vol. 49, No. 3-4, pp.142–150 143
- [59] Slater SF, Olson EM (2000), “Strategy type and performance: the influence of sales force management”, *Strategic*

Management Journal, Vol, 21, No. (8), pp. 813–829

- [60] Adaileh, M., and Elrehail, H., (2018), “ E-business supply chain collaboration measurement scale: a confirmatory approach”, *International Journal of Supply Chain Management*, Vol. 7, No. 5, pp. 22-34
- [61] Torres, P. M., Lisboa, J. V., and Yasin, M. M., (2014) “E-commerce strategies and corporate performance: an empirical investigation”, *Competitiveness Review*, Vol. 24, No. 5, pp. 463-481, 2014.
- [62] Yousaf, Z., Sahar, N., Majid, A. and Rafiq, A. (2018), "The effects of e-marketing orientation on strategic business performance: Mediating role of e-trust", *World Journal of Entrepreneurship, Management and Sustainable Development*, Vol. 14 No. 3, pp. 309-320.
- [63] Yu, Y., Wang, X., Zhong, R. Y., and Huang, G. Q., (2017) “E-commerce logistics in supply chain management: implementations and future perspective in furniture industry”, *Industrial Management and Data Systems*, vol. 117, no. 10, pp. 2263-2286, 2017.
- [64] Dhir, Sw. and Dhir, Sa., (2018), “Organizational Capability and Performance Improvement: A Study of e-Commerce Firms in Indian Context”, *International Journal of Global Business and Competitiveness*, Vol.13 , No 1, pp 35-51
- [65] Quinton, S. Canhoto, A. Molinillo, S., Pera, R. and Budhathoki, T., (2018) “Conceptualising a digital orientation: antecedents of supporting SME performance in the digital economy”, *Journal of Strategic Marketing*, Vol. 26, No. 5, pp. 427-439
- [66] Depaoli P., Za S. (2019) Designing e-Business for SMEs: Drawing on Pragmatism. In: Lazazzara A., Nacamulli R., Rossignoli C., Za S. (eds) Organizing for Digital Innovation. Lecture Notes in Information Systems and Organisation, vol 27. Springer, Cham.
- [67] Davidavičienė, V., & Al Majzoub, M. (2021), “Performance of reverse logistics in electronic commerce: a case study from Lebanon and Syria”, *Transport*, Vol. 36, No. 3, pp. 260–282
- [68] El Rassi, M.A., (2020), “Why one e-business adoption model won't fit all firm sizes: The case of Lebanon's e-service industry”, *Electronic Journal of Information Systems in Developing Countries*, Vol. 86, No. (12), pp. 12135-12152.
- [69] Grimaldi, D., Fernandez. V., and Carrasco, C., (2021) “Exploring data conditions to improve business performance”, *Journal of the Operational Research Society*, Vol. 72, No. 5, pp. 1087-1098
- [70] Hu, J. and Haddud, A. (2017) “Exploring the Impact of Globalization and Technology on Supply Chain Management: A Case of International E-Commerce Business”, *International Journal of Operations Research and Information Systems*, Vol. 8, pp. 1-22.
- [71] Gregory, G.D.; Ngo, L.V.; Karavdic, M.(2019),“Developing e-commerce marketing capabilities and efficiencies for enhanced performance in business-to-business export ventures”, *Industrial Marketing Management*, Vol, 78,pp146–157
- [72] Raymond, L. and Bergeron, F. (2008), "Enabling the business strategy of SMEs through e-business capabilities: A strategic alignment perspective", *Industrial Management & Data Systems*, Vol. 108 No. 5, pp. 577-595.
- [73] Theodosiou, M. and Katsikea, E. (2012), "Antecedents and performance of electronic business adoption in the hotel industry", *European Journal of Marketing*, Vol. 46 No. 1/2, pp. 258 283.
- [74] Chi, Maomao; Zhao, Jing; and Li, Yuanxiang, (2018), "Digital Business Strategy and Firm Performance: the Mediation Effects of Ecollaboration Capability", *International Journal of Information Systems and Change Management*, Vol. 10, No. 2, pp. 123-139
- [75] Anastasiei, B., Nicoleta D., and Octavian D., (2021), "Understanding the Adoption of Incentivized Word-of-Mouth in the Online Environment", *Journal of Theoretical and Applied Electronic Commerce Research*, Vol. 16, No. 4, pp. 992-1007.
- [76] Wu, Jin-Nan; Zhong, Wei-Jun; Mei, Shu-E. (2011). Application capability of e-business, e-business success, and organizational performance: Empirical evidence from China”, *Technological Forecasting and Social Change*, 78(8), 1412–1425.
- [77] Andonov, A., Dimitrov, G., Totev, V., (2021), “Impact of E-commerce on Business Performance”, *TEM Journal*. Volume 10, Issue 4, Pages 1558-1564
- [78] Dospinscu, N., and Dospinscu, O., (2018), “The use of information technology toward the ethics of food safety”, *Ecoforum*, Vol. 7, No. (1), pp.70-81
- [79] Dospinscu, N., and Dospinscu, O., (2020), “Information Technologies to Support Education during COVID-19”, *University Scientific Notes*, No. 3-4 (75-76), pp. 17-28
- [80] Kleindl, B. (2001). “Strategic Electronic Marketing: Managing E-Business”, *South Western College. Publishing*, Cincinnati, Ohio, ISBN-13: 978-0324013191, ISBN-10: 032401319