

E-Commerce Adoption Research: A Review of Literature

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Abstract

The purpose of this paper is to provide a comprehensive literature review of the e-commerce adoption studies. This paper investigated the papers that have been published and indexed in the Scopus database for the period from 2012-2017. This study found that e-commerce adoption studies can be classified into six themes: factors affecting e-commerce adoption, barrier of e-commerce adoption, implication of e-commerce adoption, e-commerce adoption process, improvement of e-commerce adoption and e-commerce web attraction. It is found that existing literature has given considerable attention to the drivers that facilitate e-commerce adoption while other themes have received far less attention from researchers. The significant factors that influence e-commerce adoption includes management's support, the role of government, perceived benefits, external pressures, organizational readiness, IT-related skills, capabilities and infrastructure, among others. Such limited scope of study efforts could only provide a stagnant view towards partial understanding of the dynamic diffusion process of e-commerce. Future research shall be extended to explore e-commerce adoption from the process perspective and investigate the post-adoption stages of e-commerce to observe how e-commerce adoption evolves over time.

Keywords: E-commerce; E-commerce adoption; Accounting information systems.



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1. Introduction

E-commerce has become a phenomenon in developed countries since the year 2000 and now it is still active with the integration of various social media. Since then, e-commerce adoption has been one of a significant area of research. E-commerce is a new means of conducting business, a business model other than traditional "brick and mortar" and thus a form of innovation in conducting business (Sasu, 2017). Offering a great deal of advantages over the conventional shopfront, effective e-commerce adoption is suggested to be beneficial to organizations in terms of substantial cost savings, revenue maximization, and improvement in product and service delivery.

There are many studies that have been conducted to investigate the adoption of e-commerce. There are also various issues have been exposed with numerous tools and techniques as well as theories and frameworks have been applied. This study aims to discover the relevant studies and table the development of e-commerce adoption research worldwide.

The rest of this paper is organized as follows. The next section will illustrate about the definition of e-commerce and the literature review of the underlying theories of e-commerce adoption studies. The identification and selection of relevant e-commerce papers is described in Section 3. In Section 4, the selected papers are analyzed in conjunction with the classification of e-commerce studies. Finally, the paper concludes with final remarks in Section 5 with limitations of the study and suggestions for future research.

2. Literature Review

This section will briefly discuss about the definition of e-commerce and underlying theories of e-commerce adoption studies.

2.1. Definition of E-Commerce

There is no universally accepted definition of e-commerce Esmaeilpour *et al.* (2016); Ngai and Wat (2002) yet there are many different perspectives for the definitions. For examples, according to Kalakota and Whinston (1997) as cited in (Ngai and Wat, 2002), e-commerce could be defined from different perspectives as below:

- Communications perspective - the delivery of information, products and services, or payments via telephone lines, computer networks, or any other means.
- Business process perspective - the application of technology towards the automation of business transactions.
- Service perspective - the tool that addresses the desire of firms, consumers, and manages to minimize costs while improving the quality of goods and the speed of service delivery.

- An online perspective - platform that provides the convenience of buying and selling products and information on the Internet.

Nevertheless, there are two mutual elements in most definitions, the execution of business activities via electronic medium and technology applications to support these business activities. In common with other innovations, successful adoption of e-commerce depends on a number of factors. Therefore, it is essential for organizations to recognize the possible key drivers that would contribute to e-commerce adoption, potential benefits to be seized from e-commerce adoption over the traditional bricks-and-mortar business model, as well as the significant barriers or inhibitors derived from both internal and external of the organizations that might complicate or even deter the adoption or diffusion of e-commerce. These issues have prompted this study, which sought to summarize the findings of the drivers and barriers during e-commerce adoption, required resources and capabilities of organization for e-commerce adoption, the underlying theories to explain e-commerce adoption, the e-commerce adoption process, assessment of e-commerce adoption level, and implication and improvement of e-commerce adoption level.

2.2. Underlying Theories in E-Commerce Adoption Studies

Related studies of e-commerce adoption should logically be placed in the theoretical context of innovation diffusion in order to explain the adoption of the innovation. By investigating the characteristics of the innovation process, strategies of the successful adoption of e-commerce could be recommended to organizations which are interested but yet to implement e-commerce. According to Libu Paris *et al.* (2016), there are two adoption frameworks underpinning the e-commerce adoption research, namely the diffusion of innovation (DOI) and technology acceptance model (TAM). The five factors of DOI (relative advantages, compatibility, complexity, trialability, and observability) imply that the traits of an innovation itself would determine its adoption. On the other hand, technology acceptance model (TAM) views that the extent of technology acceptance is affected by two key determinants, namely perceived usefulness (the extent of belief that application of particular system would enhance one's job performance) and perceived ease of use (the extent of perceived difficulties and challenges in using a particular system). However, due to the limitation of these two determinants in explaining various external contextual influences, TAM has been extended (such as TAM2, TAM3 and Unified Theory of Acceptance and Use of Technology (UTAUT)) through introduction of additional external variables to further improve its predictive power (Aldwsry and Mayhew, 2011).

Despite of being well received in adoption studies, DOI and TAM share mutual limitations (Aldwsry and Mayhew, 2011). Similar to TAM, DOI also focuses on technology perspective and therefore unable to take into account of various external contextual influences (the organizational and environmental perspectives). Furthermore, both of these models examine technological determinants that may influence e-commerce adoption at the individual level. Therefore, it is difficult to explain the organization's top management's perception of information technology. Furthermore, the decisions to adopt innovative technologies into the organization are bureaucratic, subject the consensus of the management and the board of directors of the organization rather than the individual end user.

Being consistent with DOI (Libu Paris *et al.*, 2016), a technology-organization-environment (TOE) framework has been widely applied in business research as well. TOE could explain an owner's intention to adopt e-commerce from the perspectives of technological, organizational, and environmental context. The technological context describes both internal technologies (the existing practice, equipment and technological infrastructure possessed by the organization) and external technologies relevant to the organization. The organizational context refers to the resources, scope, size, culture, and structure of the organization, employees' knowledge of e-commerce and role of management; while the environment context includes management support, organizational and national readiness, government support, and environmental pressures derived from partners, customers and competition. TOE framework has been proven to be more useful in explaining and understanding user behavior in technology implementation through extensive empirical support (Abualrob and Kang, 2016).

3. Method

To gain an understanding of the e-commerce adoption literature, a structured research approach is adopted. This paper obtains the articles that have been published and indexed in the Scopus database. The database has been used to search for articles related to e-commerce adoption studies that were carried out between the years 2012 and 2017, which served as a basis to understand the trend of e-commerce adoption studies. The keywords used for the search were as follows: [title (e commerce) and title (adoption)]. The selection has been limited to articles and conference papers between the years 2012 and 2017 by setting [doctype (ar or cp) and pubyear>2011]. The search for articles has been conducted in December 2017. Accordingly, there is a total of 86 research articles which are relevant with e-commerce adoption in one way or another and 86 full text access have been obtained eventually.

The full text publication being narrowed down to empirical papers that study e-commerce adoption within organizations. Conceptual and review papers are, however, being excluded from this study. Finally, a total of 49 relevant studies has been obtained for literature analysis. The literature analysis is based on full text reading and uses of Microsoft Excel for documentation and summary purpose.

4. Results

This section classifies and discusses about 49 identified empirical studies related to e-commerce adoption across global regions. The literature review conducted has found that the e-commerce adoption studies can be grouped into

six themes. Figure 1 shows the classification of e-commerce adoption studies generated from the articles reviewed while Table 1 presents the composition of the themes based on the 49 reviewed articles. Discussed in detail is presented in the later sub-sections.

Figure-1. Classification of E-commerce Adoption Studies

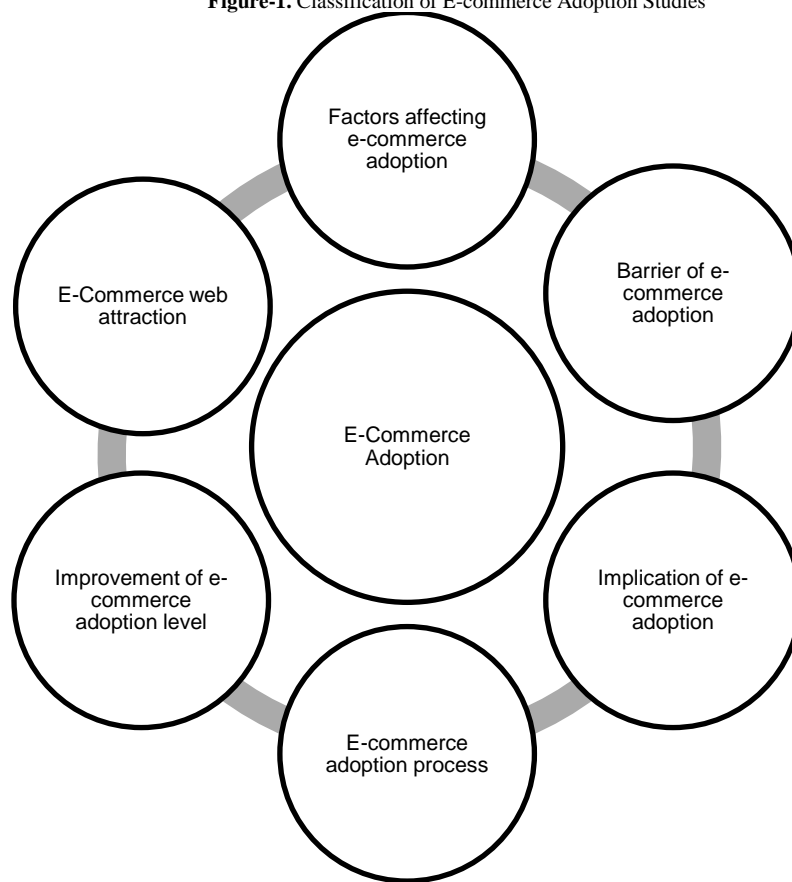


Table-1. Classification of reviewed literature according to theme

Theme	References	N	%
Factors affecting e-commerce adoption	Awiagah <i>et al.</i> (2016); Lim <i>et al.</i> (2016b); Lim <i>et al.</i> (2016a); Saffu <i>et al.</i> (2012); Ndayizigamiye and McArthur (2014); Solaymani <i>et al.</i> (2012); Ndayizigamiye and McArthur (2014); Maryeni <i>et al.</i> (2012); Ahmad <i>et al.</i> (2015); Chen <i>et al.</i> (2014); Abou-Shouk <i>et al.</i> (2013a); Alrawabdeh (2016); Al-Alawi and Al-Ali (2015); Sin <i>et al.</i> (2015); Govindaraju <i>et al.</i> (2014); Van Huy <i>et al.</i> (2012); Hajli <i>et al.</i> (2014); Al-Bakri and Katsiolouides (2015); Senarathna <i>et al.</i> (2014); Hung <i>et al.</i> (2011); Shemi (2014); Ibrahim and Stevens (2014); Al-Somali <i>et al.</i> (2015); Hamad <i>et al.</i> (2015); Sila (2013); Astuti and Nasution (2014); Kurnia <i>et al.</i> (2015); Poorangi <i>et al.</i> (2013).	28	57.14
Barrier of e-commerce adoption	Abualrob and Kang (2016); Kabanda (2012); Shemi (2014); Solaymani <i>et al.</i> (2012); John (2012); Asare <i>et al.</i> (2012); Abou-Shouk <i>et al.</i> (2013b); Govindaraju <i>et al.</i> (2012); Al Rawabdeh <i>et al.</i> (2012); Esmaeilpour <i>et al.</i> (2016); Abou-Shouk and Eraqi (2015); Faloye (2014).	10	20.41
Implication of e-commerce adoption	Freathy and Calderwood (2016); Hua <i>et al.</i> (2015); Liu <i>et al.</i> (2015); Kartiwi and Gunawan (2013) and Lamie <i>et al.</i> (2011); Sobihah and Lukman (2015); Tseng <i>et al.</i> (2015).	7	14.29
E-commerce adoption process	Cui and Pan (2015); Daries-Ramon <i>et al.</i> (2016)	2	4.08
Improvement of e-commerce adoption level	Gonçalves <i>et al.</i> (2016)	1	2.04
E-commerce web attraction	Campbell <i>et al.</i> (2013)	1	2.04

*Note: Shemi (2014) and Solaymani *et al.* (2012) discussed about two themes, namely factors affecting e-commerce adoption and barrier of e-commerce adoption.

4.1. Factors Affecting E-Commerce Adoption

A large proportion of research focused on the factors affecting e-commerce adoption. Three sub-themes could be identified within this theme, which the focus of studies of e-commerce adoption was either on small and medium sized enterprises (SMEs), business to business (B2B) or in the general type of organization.

4.2. Factors Affecting e-Commerce Adoption in SMEs

There are substantial of studies narrowed their scope towards studying e-commerce adoption by SMEs. E-commerce adoption in SMEs is influenced by various factors. (Awiagah *et al.*, 2016) and Lim *et al.* (2016a) identified that government support has the significant direct impact on SMEs' intentions to adopt e-commerce. E-commerce adoption of SME could also be stimulated by managerial support, the existence and reliability of national technological infrastructures, and mimetic pressure (first mover imitation). Lim *et al.* (2016b) contributed different perspective to enhance understanding towards the adoption behavior of SMEs, combining TOE framework and perceived strategic value. It is found that operational support and strategic decision have some influences on medium sized enterprises, having no moderating impact for small sized enterprises (Lim *et al.*, 2016a). Besides, perceived strategic value also has strong influences on medium sized enterprises despite that it does not have any influence on small-sized enterprises (Ibid.) On the contrary, Saffu *et al.* (2012) indicated that perceived strategic value (which organizational support is the strongest factor of perceived strategic value) and e-commerce adoption are significant and positively related.

From the perspective of DOI theory, Poorangi *et al.* (2013) investigated the influence of the five factors of Rogers's DOI theory (relative advantage, compatibility, complexity, trialability, and observability) towards e-commerce adoption in Malaysian SMEs across manufacturing, service and agricultural sectors. It is found that there is a significant positive relationship between the level of confidence of management and the adoption of e-commerce. Trialability and observability factors influence management's confidence level, which in turn, influences e-commerce adoption. E-commerce adoption is more likely when the management's understanding towards the perceived benefits of e-commerce and management's trust in both adoption the implementation of e-commerce. The compatibility of the adoption of the e-commerce process with the existing corporate culture could affect employee's resistance towards the adoption of e-commerce but there is no relationship between the resistance of the employee and the adoption of e-commerce. Besides, the complexity does not has a significant relationship with the e-commerce adoption. The result also shows that relative advantage generally increases the adoption of e-commerce among Malaysian SMEs. Nevertheless, the study did not look further into different aspects of relative advantage. The work of Poorangi *et al.* (2013) could be complemented by Ndayizigamiye and McArthur (2014) and Solaymani *et al.* (2012).

The findings of Ndayizigamiye and McArthur (2014) revealed that relative advantage (such as improvement of information access, expansion of markets, and cost reduction in maintaining up to-date company information) and owners or management enthusiasm towards e-commerce adoption would significantly drive small, medium, and micro-sized enterprises (SMME) to adopt e-commerce. Congruent with Ndayizigamiye and McArthur (2014), Solaymani *et al.* (2012) also advocated that cost reduction (lower level of the internet service costs and free-of-charge e-commerce facilities provided by the government) motivates firms to adopt e-commerce. Besides, the compatibility of e-commerce with both the company's preferred work practices and values of the firm also significantly influences the implementation of e-commerce in SMMEs (Ahmad *et al.*, 2015; Maryeni *et al.*, 2012; Ndayizigamiye and McArthur, 2014).

Among all important factors in e-commerce adoption in SMEs, according to TOE framework, Chen *et al.* (2014) ranked environmental construct (competitor, government, industry, supplier, and customer) as the most important factor that should be considered among SMEs in South-East Asia while technological construct is the least. In contrast, the rank in order of importance of Saffu *et al.* (2012) were perceived usefulness, ease of use, organization readiness, and external pressure. General external pressure (Kurnia *et al.*, 2015), external pressure imposed by trading partners (Abou-Shouk *et al.*, 2013b; Al-Bakri and Katsioloudes, 2015), and external pressure imposed by competitors (Abou-Shouk *et al.*, 2013a; Al-Bakri and Katsioloudes, 2015; Lim *et al.*, 2016a;2016b) motivates SMEs to adopt e-commerce. Despite of that, trading partners' pressures and competitors' pressures are not conclusive as Ahmad *et al.* (2015) and Alrawabdeh (2016) found otherwise in the context of Malaysia and Jordan. Other external change agents such as organization advisors, external consultants, and e-commerce solution providers (Ahmad *et al.*, 2015), the government (Ahmad *et al.*, 2015; Al-Alawi and Al-Ali, 2015; Lim *et al.*, 2016a) are able to exert influence towards e-commerce adoption. Despite of the importance of environmental constructs in influencing e-commerce in SMEs indicated by substantial studies, Sin *et al.* (2015) concluded that there is no relationship between environmental context and e-commerce adoption among SMEs in Northern state of Malaysia, owing to relatively conservative culture which cause resistance in change.

Under the TOE framework, it is also important to highlight that internal influential stakeholders such as business owners, managers and employees has proven to be able to dominate the e-commerce adoption decision by various studies. Therefore, factors such as business owner's or manager's support (Al-Alawi and Al-Ali, 2015; Govindaraju *et al.*, 2014; Lim *et al.*, 2016a; Maryeni *et al.*, 2012; Van Huy *et al.*, 2012) and employees' information technology (IT) skill (Govindaraju *et al.*, 2014; Maryeni *et al.*, 2012; Van Huy *et al.*, 2012) contribute substantially to e-commerce adoption in SMEs. Nevertheless, the factor of the employees' IT skill level seems to be non-conclusive as Ndayizigamiye and McArthur (2014) and Alrawabdeh (2016) could not detect a significant relationship between this factor and e-commerce adoption in SMMEs. Besides, strong and positive between e-commerce adoption and organizational readiness (which involve an employees' IT skills level, internal and national information and

communication technology (ICT) infrastructures, national internet penetration rate, among others) has been confirmed by [Hajli et al. \(2014\)](#) and [Al-Bakri and Katsioloudes \(2015\)](#). On the other hand, [Kurnia et al. \(2015\)](#) found inconclusive relationship between e-commerce adoption and organizational readiness. This is because the one of the constructs of organisational readiness, perceived organization resources and governance, finds statistically significant and positively related to e-commerce adoption. Nevertheless, another construct of organisational readiness, perceived benefit, surprisingly is not found to significantly affect e-commerce adoption in Malaysian retailing SME, especially the adoption of email and the Internet. These contradictory results indicated that the influence of a specific construct of organizational readiness is likely to be diverse.

Other than that, it is also important to recognize the role of culture in determining the drivers of e-commerce adoption in SMEs. Different organizational cultures would also lead to different maturity levels of e-commerce adoption. Adhocracy culture, among other types of culture, such as market culture, hierarchy culture, and clan culture, would best support e-commerce adoption in SMEs [Senarathna et al. \(2014\)](#). The characteristics market culture and hierarchy culture indicated a negative correlation in relation to e-commerce adoption (Ibid.)

Despite of the efforts of government in promoting technology use, the technology adoption rate among SMEs are still low. Therefore, some of the researchers choose to investigate the factors affecting an entrepreneurs' decision on internet adoption, by measuring technology readiness (TR) in particular. For example, [Astuti and Nasution \(2014\)](#) indicated that Indonesian SMEs have moderate TR and there are significant differences in TR across respondents' backgrounds. Therefore, the findings implied further support required for SMEs to adopt e-commerce.

4.3. Factors Affecting e-Commerce Adoption in B2B

There are three articles ([Al-Somali et al., 2015](#); [Hamad et al., 2015](#); [Sila, 2013](#)) upon 50 articles reviewed to set the context of research in investigating business-to-business (B2B) companies. Similar to the findings on other type of organizations, the results of [Hamad et al. \(2015\)](#) revealed that the American SMEs' adoption of each level of B2B e-commerce was mainly affected by relative advantage, top management support, firm size, and government support. Besides, it is interesting to find that different maturity of e-commerce adoption would be influenced by different constructs in the context of B2B companies. For example, [Al-Somali et al. \(2015\)](#) concluded that interactive e-commerce adoption is driven by IT readiness, management team support, regulatory and legal environment, and technology consultants' participation; non-interactive e-commerce adoption (usage of email communication and static website) is driven by learning orientation, market force and economic downturn influence, strategic orientation, and all the constructs that affect non-interactive e-commerce adoption; stabilized of e-commerce adoption is driven by formalization level, adoption cost, relative advantage, and all the constructs that affect interactive e-commerce adoption.

On the other hand, disregard of the maturity level of e-commerce adoption, [Sila \(2013\)](#) found that scalability and top management support are the factors which have higher contributed in driving B2B e-commerce adoption while the other factors such as competitors, network reliability, scalability, top management support, and trust also significantly correlated with B2B e-commerce adoption. Nevertheless, pressure from trading partners, costs, data security, and complexity do not contribute to B2B e-commerce adoption. Furthermore, the influence of all of the contextual variables (including firm size, firm type, and management level of respondents) towards adoption factors indicating the importance of the need to account for contextual differences in investigating B2B e-commerce adoption decision.

4.4. Factors Affecting E-Commerce Adoption in General (Non-Specific Type of Organization)

On the other hand, from the point of view of general type of organisation, compatibility factors (such as consistency between e-commerce and the firm's technology infrastructure, values, culture, practices), relative advantage and relative risk, organizational readiness (availability of financial and technological resources), strategic decision operational aids (managers' decision-making, availability of information, and industry linkages), and (external pressure from stakeholders which adopt e-commerce) were significant for discerning e-commerce adoption ([Hung et al., 2011](#); [Walker et al., 2016](#)). Nevertheless, it is non-conclusive in terms of the influence of pressure from external parties. Supplier and government could not affect a firm's decision to adopt an online trading system ([Hung et al., 2011](#)) while customer preference in e-commerce might be influential and contribute positively to the extent of e-commerce adoption ([Shemi, 2014](#)). Furthermore, in contrast with general firm size, pressure from trading partners is significant in affecting SMEs adoption decision ([Al-Bakri and Katsioloudes, 2015](#)). Additionally, different maturity levels of e-commerce adoption would have different impacts, while some factors have significant impact on the adoption of one e-commerce maturity level, they could have an immaterial impact on another maturity level ([Ibrahim and Stevens, 2014](#)).

4.5. Barrier to E-Commerce Adoption

E-commerce adoption would face certain barriers, both externally and internally. [Abualrob and Kang \(2016\)](#) highlighted the major barriers to e-commerce in Palestine uses a TOE framework, the model of innovation resistance, and DOI. The study has found that the occupation restrictions, political instability, and logistical obstacles are the primary external barriers that prevent the adoption of e-commerce in Palestine. In the context of Tanzania, it is found that the barrier of e-commerce adoption at the organizational level derives the lack of management support

(Kabanda, 2012). Management resistance is in fact caused by an ongoing resistance from government in the adoption of e-commerce in order to strengthen and reaffirm their authority at the expense of SMEs (Kabanda, 2012).

Shemi (2014) found that key barriers that deter e-commerce adoption is slow Internet speed, poor telecommunications, lack of industry support, and lack of e-commerce policy in the country. Financial problems and high level of uncertainty in the e-commerce market for SMEs would also decrease the tendency of SMEs to adopt e-commerce (Solaymani *et al.*, 2012). Besides, Faloye (2014), John (2012) and Al Rawabdeh *et al.* (2012) confirmed that security is one of the crucial issues affecting the development of e-commerce. The negative perception of the customer towards the security and confidentiality of e-commerce would decrease customers' confidence in e-commerce and in turn affect the development of e-commerce negatively. On the other hand, Govindaraju *et al.* (2012) found that the key external barriers are lack of external sources of information from vendors, IT consultants and public information media, and lack of competition threats.

In terms of internal barrier, the findings of Abualrob and Kang (2016) revealed both perceived uncertainty and perceived complexity had an indirect (mediated with perceived risk) but significantly positive impact towards e-commerce resistance among business owners. Shemi (2014) found that key internal barriers that deter e-commerce adoption are lack of access to clients' website, lack of technology infrastructure, and the lack of ICT skill across different industries in Botswana. Nevertheless, the factors of lack of technology infrastructure and ICT skill appear to be inconclusive as Asare *et al.* (2012) and Faloye (2014) found that lack of technical know-how is not considered as the main hindrance. Surprisingly, underdeveloped basic infrastructure that attributes to frequent power supply disruption is a hindrance towards e-commerce adoption by SMEs in developing countries such as Botswana, and Ghana (Asare *et al.*, 2012) and small scale enterprises (SSEs) in Nigeria (Faloye, 2014).

Major internal barriers found by Abou-Shouk *et al.* (2013b) and Abou-Shouk and Eraqi (2015) are resource limitations, which include unavailability of resources to support e-commerce adoption, lack of IT skilled staff, time constraint for system transition, and organization resistance towards a new system. Similarly, Govindaraju *et al.* (2012) found that lack of management support and human resource limitations (the number of educated employees, the number of employees with sufficient IT skills, employees' resistance, knowledge about the benefit and implementation of e-commerce, time to learn about e-commerce, and the organization's way of doing business) as key internal barriers. Abou-Shouk and Eraqi (2015) also revealed that the attributes of the adopted technology (trialability prior to adoption, perceived ease of use and compatibility with business nature) are a significant barrier to adoption among SMEs.

On the other hand, Esmaeilpour *et al.* (2016) confirmed that both external and internal barriers (organizational barriers, technical barriers and environmental barriers) have significant impact on perceived ease of use and perceived usefulness in the context of e-commerce acceptance in SMEs of Iran. The findings also suggested that perceived ease and perceived usefulness of e-commerce would affect SMEs' attitude to accept e-commerce, which in turn affects the intention to use e-commerce. Intention to use e-commerce has significant impact on actual adoption of e-commerce.

4.6. Implication of E-Commerce Adoption

There are six reviewed articles that investigated the implication of e-commerce implementation such as potential benefits or impacts towards the performance of the business of adopting e-commerce. By explaining the impact of e-commerce adoption (in one way than the other) rather than focusing on the drivers that encourage adoption decisions, this theme of researches offers an important complementary view and makes a critical contribution to the literature.

The correlation analysis of Sobihah and Lukman (2015) indicated that the performance of the hotel has a significant positive relationship with e-commerce adoption variable. Besides, organizational culture acted as mediator between the relationship of e-commerce adoption and hotel performance. Nevertheless, it is unclear that in what means would e-commerce adoption positively influence the performance of the hotel. Furthermore, the authors did not disclose the definition of performance in their study. On the other hand, Hua *et al.* (2015) investigated the impact of e-commerce adoption towards the performance of hotel in a more sophisticated way by investigating the effectiveness of e-commerce expenditures, whether such expenditures affect performance, or whether such effects are consistent over time and across different chain scales. The study found that e-commerce expenses significantly contributed to the room revenue of hotels. The subgroup analyses further revealed that e-commerce expenses significantly contributed to the gross operating profit for midscale and upscale hotels, but not for the luxury, upper upscale, and the upper midscale categories. In addition, the impact of e-commerce expenditures on room revenue over time appeared to be congruent with the evolution of e-commerce, consumers' behavior, and economic conditions. The study has highlighted the importance of thoroughly understanding the benefits of e-commerce towards different types of services provided by the firm is required in order to deploy resources and marketing strategies to coordinate and synchronize e-commerce activities with the overall strategy of the firm. Hence, the impact of e-commerce adoption is the suitable direction to be explored in future study.

In the perspective of the impact of the adoption of e-commerce towards operating cost, Liu *et al.* (2015) found that the adoption of e-commerce contributes to cost savings. Nevertheless, cost saving appeared to be more effective in large firms than in SMEs and in high-tech industry instead of traditional industry. The researchers justified the differences by suggesting that SMEs may not have access to the same infrastructure as large firms and therefore the effects of e-commerce may vary according to firm size. Similar to the findings of Liu *et al.* (2015), the adoption of e-commerce contributes to cost savings in female-owned SMEs in Indonesia (Kartiwi and Gunawan, 2013). Experiencing most of the benefits of e-commerce suggested by most of the studies, cost reduction in business

operation is nevertheless less evidenced in the context of rural areas due to the development disparity between urban and rural areas in Indonesia (Kartiwi and Gunawan, 2013).

In contrast with the findings of the mainstream studies which advocating the advantage of e-commerce adoption, Freathy and Calderwood (2016) concluded that while the e-commerce has been beneficial to domestic consumers, reconfiguring the shopping behavior of island residents, it has impacted upon islands businesses negatively. While providing consumers with greater choice and convenience the growth of e-commerce has brought a competitive threat to the local retail economy. Furthermore, the local retailers have neither exploited the benefits of ICT to retaliate to the threat nor capitalized upon the opportunities posed by e-commerce. As the findings indicated that the overwhelming majority of online purchases are not placed with local retailers, the growth of e-commerce therefore did not contribute to domestic economy and further reinforced the fragility of the Scottish isles. Similar to Freathy and Calderwood (2016), Lamie *et al.* (2011) studied about rural small businesses across the United States by conducting case studies. They have provided interesting insights in terms e-commerce strategies include smaller businesses shall concentrate on market niches for their online business, effectively use services to assist companies in implementing e-commerce, integration of e-commerce into overall business operations, readiness to face business growth, and e-commerce might not suitable for small businesses due to imbalance between cost and benefit. Both of these studies have highlighted that e-commerce does not necessarily do any good for every type of organizations in all geographical contexts.

In addition, most researchers do not consider the impacts of firms' improvisational capabilities upon e-commerce adoption. Improvisational capabilities are important to ensure persistent realignment between the environment and the firm's capability, which allow firms to spontaneously build new operational strategies by utilizing existing resources to correspond with the turbulent market environment (Tseng *et al.*, 2015). Tseng *et al.* (2015) have found that the sampled firms gradually increase their capabilities of using e-commerce technologies to support e-commerce activities along 3-year timeframe, and thus indicating the improvement of their improvisational abilities upon e-commerce adoption. Nevertheless, it is important to highlight that IT diffusion has been never instantaneous as "improvisation" would only progressively increase over time and companies learn to utilize e-commerce more creatively, and in turn, result to higher performance.

4.7. E-Commerce Adoption Process

Existing studies have focused considerable attention on the factors that facilitate or inhibit e-commerce adoption. Such studies reveal why enterprises adopt e-commerce, but disregard of how companies adopt e-commerce. There are two studies which explored the e-commerce adoption process. Cui and Pan (2015) explore e-commerce adoption from the resource-based theory and resource orchestration perspective to explore how manufacturers adopt e-commerce. This study explains how organizational resources can be orchestrated and used to develop capabilities to correspond to changing external environment in order to adopt e-commerce success. They also indicated the requirement of particular focal capability: sensing and responding, cooperating and innovating under a competitive environment at each phase of e-commerce adoption. These focal capabilities needed to be developed through resource-focused actions such as acquiring and deploying basic IT resources with the support of research and development, production and service resources; enriching IT resources with other resources; and further pioneering IT resources, converting offline resources, and enriching coordination of internal and external resources.

Another study by Daries-Ramon *et al.* (2016) focus on the online presence of the several ski resorts in Iberian Peninsula. They categorized the implementation of e-commerce by mountain and ski resorts into three phases, namely the promotion (information), provision (dynamic information), and process (functional maturity). Their analysis indicated that there is still room for improvement in the adoption of electronic commerce by mountain and ski resorts in the Iberian Peninsula as only 15.1% of the samples have reached phase 3, and the vast majority remains at second phase.

4.8. Improvement of E-Commerce Adoption Level

There is another study that investigates about possible improvement to be done to in order to escalate e-commerce adoption level. This study focuses on the context of the European Union, particularly Portugal and Spain, which has faced far-from-desired-level e-commerce initiatives as well as level of adoption over the last 15 years. By employing on focus group method, Gonçalves *et al.* (2016) have gained further insights relating to strategic recommendations in improving e-commerce adoption levels in Iberian enterprises. Suggestions include: lobby towards governments for legislative amendment; better access to financial resources through the assistance of venture capitalists, banks and business angels; diffusion of e-commerce know-how through partnerships with higher education institutions; and new training courses focusing on basic IT concepts such as Web 2.0 capabilities

4.9. E-Commerce Web Attraction

Despite of the importance of the innovation diffusion related frameworks underpinning the e-commerce adoption, there was one article by Campbell *et al.* (2013) which studied about e-commerce theoretical model explicitly. Campbell *et al.* (2013) advocated that attracting customers and building up business-to-consumer (B2C) customer relationship is essential in multiphase e-commerce adoption process. The e-commerce attraction model (eCAM), a self-developed model has been developed to offer a theoretical foundation in two empirical studies which investigated the influence of initial customer perceptions of a website on attraction toward the website. The results demonstrated that eCAM is able to provide additional insights for understanding how website design influences e-

commerce attraction and adoption comparable to previously established adoption models (i.e., the Technology Acceptance Model (TAM) and WebQual).

5. Conclusion

This paper provides a comprehensive literature review of published e-commerce adoption research based on articles published and indexed in Scopus databases for the year 2012-2017. The result shows that, e-commerce adoption research could be categorized into six themes: factors affecting e-commerce adoption, barrier of e-commerce adoption, implication of e-commerce adoption, e-commerce adoption process, improvement of e-commerce adoption and e-commerce web attraction. There are two popular theories which have been used by the researchers in this field of study is the TOE and DOI. The use of this theory is able to provide a comprehensive understanding behind the reason why there is resistance towards the adoption of e-commerce by the staff in the organization.

The research findings have implications on e-commerce adoption research. In terms of theory, the findings provide a guideline for the other researchers to put their own research in a better context, and thus contribute in understanding the relevant e-commerce adoption issues that require further investigation.

The suggested research agenda is based on the literature review and the identified gaps in the published e-commerce research. Thus the contribution of the paper is threefold. First, the literature review provides an overview of what has been done, and by extension, what yet to be done in e-commerce adoption research. Second, the themes presented provides a structure for future studies related to e-commerce, thereby giving context and supporting the understanding of such work and its potential impact on future research. Third, the suggested research agenda provides a guideline for scholars wanting to do research in e-commerce adoption and helps to direct their attention to those areas most in need of further investigation.

Although this study has shed some light on prior literatures on e-commerce adoption studies, the findings should be interpreted with caution. The limitation of single database and keywords might fail to give more extensive number of articles to be reviewed in the study. Nevertheless, the majority of the selected studies in this literature review focused on the drivers that encourage e-commerce adoption. Such limited scope of studies could only provide a stagnant view towards partial understanding of the dynamic diffusion process of e-commerce. Future research shall explore further to investigate the post-adoption stages of e-commerce.

Future research shall be extended to explore e-commerce adoption from the process perspective and investigate the post-adoption stages of e-commerce to observe how e-commerce adoption evolves over time. Furthermore, most of the studies primarily focused on only one theory to rule out the factors that contribute to e-commerce adoption, despite of the limitations of underlying theory itself. It is advocated that existing theories shall be combined and adapted according to geographical and cultural differences to apply in the future studies in order to provide a more in-depth picture on e-commerce adoption.

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