Impact of e-commerce adoption on the business performance of SMEs in Saudi Arabia

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ABSTRACT

The purpose of this paper is to analyses whether the adoption of e commerce improves company business performance and whether business size and e-commerce experience might moderate this relationship. We have used resource-based-view of a firm to provide the theoretical underpinning to understand how e-commerce adoption is linked to firm performance. We have conducted a survey and obtained 100 usable responses from Saudi Arabian SMEs. The research is based on a survey within the SMEs industry and a regression model investigating the relationships between e commerce and performance. We first verified our variables to check e-commerce using confirmatory factor analysis. We then identified their influence on performance using regression. Finally, we verified the roles of business size and e-commerce experience using moderated regression analysis. Our results show that e-commerce have strong impacts on performance of SMEs. Size of SMEs, measured using number of employees and sales growth, moderates the impacts of e-commerce adoption aspects on performance, while e-commerce experience, measured using the length of time SMEs and level of experience in e-commerce, does not moderate. This paper offers an original analytical approach to identifying the relationships between a company's adoption of e-commerce, performance and business size and e-commerce experience within the retail industry.

Keyword: *E-commerce, business performance, organization, SME, B2C, retail, Saudi Arabia*

1. Introduction: Background study

E-commerce, or the act of purchasing and selling things online (Zhu and Kraemer, 2005; Ramanathan et al., 2012), has reformed organizations' methods of creating growth, opening new business options, and increasing the number of reorganization procedures required to participate in marketplaces. This problem is especially pertinent to the B2C sector since it is a highly dynamic and worldwide business with transnational, complicated, and fragmented networks (Yu et al., 2012; Macchion et al., 2015). E-commerce can be a major driver for growth and economic transformation in developing countries (Hajli et al, 2014) and the growing use of internet platforms can be one of the critical factors to create major changes for Saudi Arabian's economy transformation. The current government aims to transform Saudi's economic structure to becoming a value-based and innovation-driven economy. The favorable characteristics inherent in the internet such as speed, user-friendliness, low cost, and wide accessibility have allowed

electronic commerce to be increasingly diffused globally, bringing countries together into a global networked economy (Gibbs and Kraemer, 2004).

The competitive business environment, and the need to survive in it, makes SMEs' adoption of e-commerce inevitable: SMEs must adopt innovative and informed e-marketing strategies to remain distinct, profitable, and successful in domestic and international markets. The literature on e-commerce has mostly explored the relationship between e-commerce and economic performance (Porterfield et al., 2010), but a clear analysis within the SMEs sector is lacking; so, this research explores the influence on business performance in the retail industry. But at the other hand, few contributions have sought to analyze the impact of e-commerce on other performance dimensions: innovation is critical in the SME sector, and operational performance is critical because this industry is labor-intensive. As a result, the purpose of this study is to investigate the relationship between e-commerce and business performance. In various economies and developing countries like Jeddah saudi arabia, e-commerce has encouraged the emergence of new technologies and business models. With the advent of online shopping, significant changes are occurring in supermarket retailing, in particular about channel growth and collaboration, a redefinition of the company reach, modeling of distribution centers and core processes, new consumer value-generating approaches, and Online collaborations. Nevertheless, over the last few years, the position of the online store itself has changed greatly (John Chituanya, 2003).

Over the last year, the retail e-commerce business segment experienced massive growth through economic participation. The value of e-commerce reduced drastically. Retailers will now promote their goods worldwide. This will significantly boost its sales and customer base. The need for ecommerce in the global competitive world is important for the survival of business organizations (Dhir, 2018). The awareness of key success factors in the implementation of e-commerce is therefore vital to business organizations' ability to tackle and step forward accordingly because failure to incorporate such factors can have significant effects on corporate results.

Small and medium enterprises (SME) are generally characterized by the limited scale of their operations (Rasek, 2017, p-61). SMEs play an important role in economic development of many countries around the world. Given the enormous benefits of e-commerce, many businesses are attempting to harness the benefits of e-commerce and SMEs are not exception to this trend. There are a number of research studies in the literature that have aimed to identify how SMEs have benefited by adopting e-commerce. For instance, Santarelli and D'altri, 2016 have identified that e-commerce helped Italian SMEs to increase their customer base, develop new markets and improve communication with customers. In this study, we will concentrate on Saudi Arabian SMEs specially the retail industry. SMEs are thought to have reached their zenith in the late 1980s and early 1990s. During this time, they accounted for 70% of overall exports. They also accounted for roughly 97 percent of all businesses in Saudi Arabia. Unfortunately, the number of SMEs and the volume of exports have been dropping over the years. As a result, SMEs in have begun to recognize the need of utilizing innovative company structures with potential to use new technology (Daniel and Grimshaw, 2002).

Based on a review of the literature, this study has found two important gaps. First, there are only a few studies (e.g., (Chen, 2004; Chu, 2009)) looking at SMEs on the impact of e-commerce on performance. Second, while most of the studies have focused on the general influence of e-commerce on firm performance, there seems to be relatively few studies that attempted to understand the influence of e-commerce on various functional aspects in a business. To solve these two deficiencies, we separate the effects of e-commerce on two important functions, Business size and e-commerce experience, and investigate how these two affect the success of SMEs. To conduct our study, we used a specially constructed questionnaire to collect data from SMEs. We employed a resource-based view as our theoretical basis in this study, which is further detailed in Section 2. The remainder of the paper is arranged as follows. The second section summarizes the current literature and creates a research hypothesis. Section 3 discusses the research approach employed in this work, with a focus on the survey questionnaire. Section 4 discusses data analysis and outcomes. Section 5 delves more into the findings. Section 6 closes this work by discussing the management implications, limits of our study, and future research opportunities. The purpose of this study is to determine how e-commerce affects the performance of Saudi Arabian SMEs. As a result, the target demographic SMEs, which are defined by the Small and Medium Enterprise Administration (SMEA, 2006) as enterprises with less than 200 workers, with no further industry or geography limits.

2. Literature Review

2.1 E-commerce use and its determinants

The discovery of the e-commerce markets worldwide has never stopped, and the emphasis has intensified over the last 10 years on the B2C e-commerce market. Wang (2014) also noted that several scholars are interested in study in various forms of e-commerce marketing characteristics (Wang, Zha, Bi, & Chen, 2018). A payment by a credit card reader is also a sort of e-commerce operation (business dictionary, 2018). Fatonah (2018) defined e-commerce as any economic or business activity that uses Information Communication Technology (ICT)-based applications in its transactions. Tunca et al. (2012) broadly defined e-commerce as "marketing, selling and buying over the Internet (e-tailing), business-to-business electronic data interchange (EDI), conducting research and seeking information, emailing and computer faxing, internal information networks for employees and ensuring the security of online transactions and information transfers." E-commerce is used not only for buying and selling but also for a wide range of pre-sales efforts (Magobe and Kim, 2015). A review of literature indicates that there is a rich stream of research focusing on technology diffusion on individuals and organizations (Lai and Awa, 2017; Ward, 2013; Chan and Zhou, 2012). Some of the popular areas studied were on adoption and/or usage of different types of technologies such as electronic fund transfer (EFT), electronic data interchange (EDI), enterprise resource planning, adoption drivers, adoption barriers or hindrance, and many others. In the late 2000s, however, the focus seems to shift to e-commerce adoption.

Other studies focusing on the post-adoption use of e- commerce in retailers, service providers, and manufacturers in developed countries have determined that contextual factors (e.g., technological competence, financial commitment, firm size, the firm's scope, competitive pressure, regulatory support/barriers, the readiness of partners, and investment costs) and four innovative characteristics (relative advantages/perceived benefits, compatibility, costs, and security concerns) are important predictors of the intensity of e-commerce use (Zhu and Kraemer, 2005), (Gibbs and Kramer, 2010), (Salwani et al., 2009). Firms with higher perceived benefit ratings for e- commerce adoption are more likely to incorporate various applications into their work (Hamad et al., 2018), (Gibbs and Kraemer, 2010). Additionally, the economic environment can shape the effects of these factors (Zhu & Kraemer, 2005), (Zhu et al., 2006). Further, globalization has had considerable influence on the scope of e-commerce use. For global firms, the adoption and use of e-commerce makes it easier and cheaper to expand their market presence across borders. Gokmen et al. (2012) suggested that highly global firms are more likely to engage in e-commerce in response to foreign competition and the operational need to reduce transaction costs and coordinate activities across national borders.

E-commerce means the electronic exchange of goods or services. E-commerce has evolved over many years, as with any new technology or consumer buying market. Mobile devices such as smartphones and tablets have become more popular in recent years. Consequently, e-commerce was also introduced mobile devices. In theme and time, the growth of social media is also a major driving force behind e-commerce.
Turban et al. (2008, p.4) claimed that e-commerce involves "the procurement and selling of goods and services to consumers, acting with associates and carrying out electronic transactions in an association"(citedinMathew, 2017).
Noor Aziz and Alsaad. (2018) conducted an E-commerce analysis and its effect on the management of businesses. They assumed that e-commerce could have a significant impact on the business; they stressed that e-commerce alters production systems from mass production to demand-driven. They also noted that e-commerce could indeed impact marketing, design, and management of human resources, warehousing, and the growth of providers.

2.2 Effects of e-commerce adoption on business performance

Innovative ways in which e-commerce is implemented in a firm will help improve its overall business performance. This is applicable to both operations and marketing side of SMEs. E-commerce helps to improve operations management functions of a firm, usually blending both e-commerce (online channels) and bricks-and-mortar (traditional offline channels) to attain both sales and cost advantage (Schniederjans and Cao, 2002). Karagozoglu and Lindell (2014) have found that e-commerce has a positive impact on the development of customer base (a marketing function), whereas it does not have a significant impact on purchasing management. On the contrary, Love and Irani (2004) have found that e-commerce helps SMEs realize benefits in terms of various operations functions, thereby helping to improve overall performance. Using structural equation modelling, Hafeez et al. (2006) have identified a positive relationship between supply chain strategy and business strategy, and that this relationship

varied among adopters and non-adopters of e-business in the UK. Bauer (2018), nevertheless, claimed that e-marketplace structure could lead to price wars. He said that traders used to sell in physical shops could feel more competitive in e-commerce pressure. Their goods are sold on the same market alongside competitive sales, where competitors can offer better prices. This can have a negative effect on the retailer. There is hardly any literature focusing on this region, particularly in Saudi Arabia. Lin & Wang, (2016) assumed that online marketing should be subject to the 4Rs (Relevance, React, Relationship, Return) marketing strategies which are typically applied in traditional marketing. This indicates that the relationship with consumers is the basis for marketing advantages.

	Measures	**Reference**
E-commerce practice	Electronic Marketing Electronic Advertising Electronic Customer Support Electronic Order and Delivery Electronic Payment System	Sahlman (2011) Poom (2001) Santareli (1997) Schnierderjan (2002) Ramamathan (2011) Jevons (2010) Rodriguez (2010)
Business Performance	Sales Growth Customer base Customer Satisfaction Process enhancement Competitive advantage Value improvement of services	Song (2001) Ahmed (2012) M.Murphy (2016) Wong (2001) Mckinley (2010)
Moderator: Business Size	Annual Sales Number of employees Assets	Barney (2007) Kenny (2007 Bedeian (2009) Mossholder (2000) Podsakoff (2010)
Moderator: E-commerce experience	Lengths of e-commerce use	Droge (2001) Tanriverdi (2003) Westland (2013)

Table 1: Main performances metrics impacted by e-commerce

This is a valuable idea to remember in the study when providing advice on B2C SME strategies to improve their businesses in the e-marketplace. Rahman (2016) stated that several factors impact customers' decisions on the website of purchase, including website design, website function, website information, and other services in B2C websites. This indicates that consumers are not only attracted because of the products, but also the characteristics they can get from the websites. Li & Wang (2016) found that website design, transmission speed, information quantity, service quality, and popularity are the factors that affect business performance.

Prior IS literature indicates that the RBV theory has been used to analyze IT capabilities (Perrigot et al., 2013) and to explain how the business value of IT resides more in the organization's skills to leverage on IT as compared to the technology itself (Ahmed and Dalbir, 2012). It shows that the business value of IT depends on the extent to which IT is used in the key activities in the firm's value chain (Zhu and Kraemer, 2005).

In relation to e-commerce innovation, the RBV theory is used to demonstrate how firms leverage their investments in e-commerce to create unique internet-enabled capabilities that determines a firm's overall e-commerce effectiveness (Zhu, 2004).Looking at the application of the RBV theory in discussing e-commerce usage and value creation, Zhu and Kraemer (2005) attempt to integrate the TOE model and the RBV theory as their conceptual model to assess the adoption and value of e-business in organizations.
The RBV of a firm has been used previously to provide the theoretical underpinning to understand how e-commerce adoption is linked to firm performance. This theoretical paradigm seeks to explain firms' adoption of e-commerce and the subsequent performance (Barney and Clark, 2007). E-commerce adoption in recent years has helped many firms to exchange information and to integrate their operations well in order to serve their customers better. These firm-specific resources (e-commerce/information exchange) support RBV (Tanriverdi and Venkatraman, 2005).

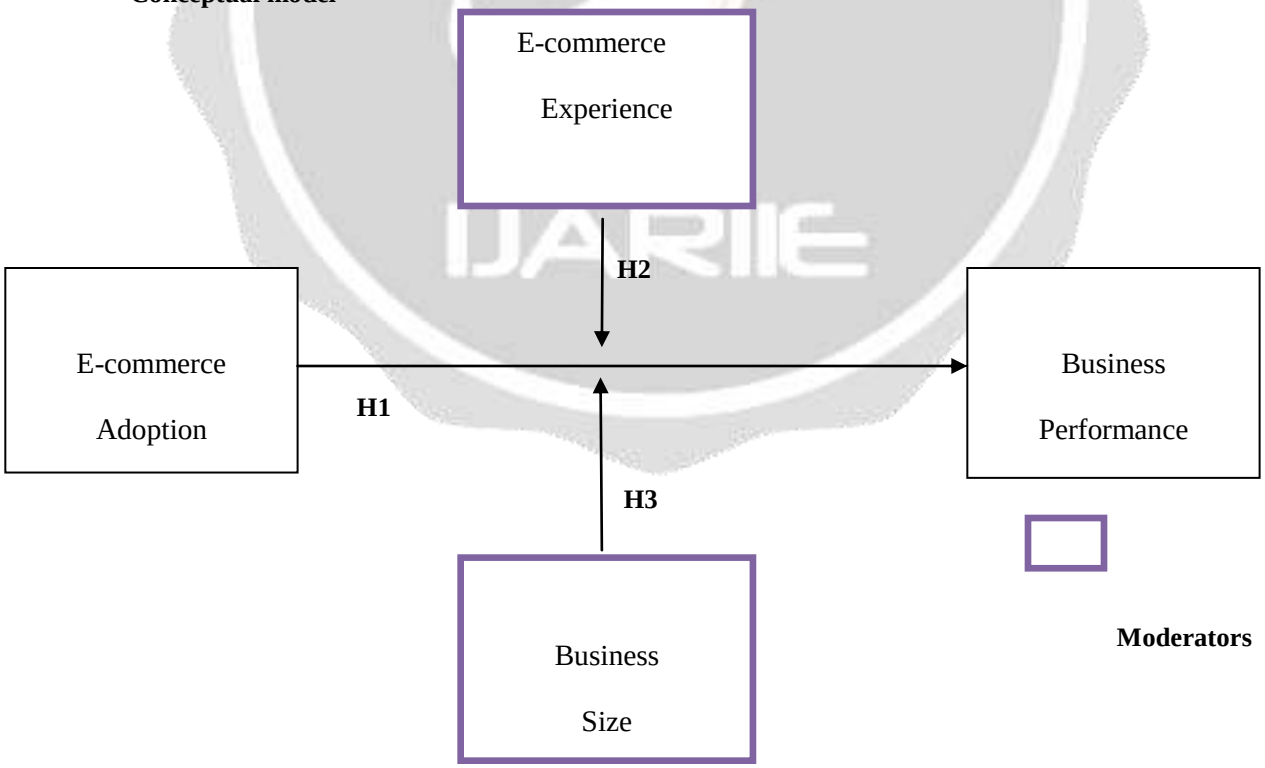
2.3 Hypotheses development

- **Hypothesis 1.** E-commerce adoption has a positive impact on the performance of B2C SMEs.

Moderators on the impact of e-commerce: E-commerce experience and Business Size

- **Hypothesis 2.** The longer the e-commerce adoption, the stronger the impacts on overall Business performance of B2C SMEs.
- **Hypothesis 3.** The larger the size, the stronger the impacts of e-commerce on overall performance of B2C SMEs.

Conceptual model



3. Research Method

3.1 Data collection and Sample

The purpose of this study is to determine how e-commerce affects the performance of Saudi Arabian SMEs. As a result, the target demographic SMEs, which are defined by the Small and Medium Enterprise Administration (SMEA, 2006) as enterprises with less than 200 workers, with no further industry or geography limits. Respondents of our research survey belong to six main industries with high SMEs population—manufacturing/processing (39.2%), trading/agency/wholesale (35.5%), computer/IT/electronics (7.5%), business service (7.5%), chemical/pharmaceuticals (2.8%), and others (7.5%). According to SMEA (2018), SMEs account for 87.63 percent of all Saudi Arabian firms, with a total of 1,236,586 in 2018. To compensate for the low response rate, we used convenience sampling instead of random sampling, with a sample size of 200. We gathered data using a survey questionnaire to generate a diverse set of samples (Saunders et al., 2017). The research questionnaire is formed in such a way:

To identify the business performance after using e-commerce, and what aspect of e-commerce applications has a stronger impact on performance.

Determine whether the business size or e-commerce experience influences the performance.

Because the purpose of this study is to investigate the impact of e-commerce on the performance of Saudi Arabian SMEs, we focused on developing a questionnaire with quantitative data and avoided open questions in order to increase the number of responses. The questionnaire was graded on a 1–5 scale, with 1 indicating bad performance and 5 representing excellent performance, similar to questionnaires used in prior research on the effects of e-commerce (e.g., Kumar and Petersen, 2016; Gillham, 2017).These five scales were used to assess overall performance in terms of sales growth, customer base, customer happiness, process improvement, and competitive advantage. To achieve a high response rate, we adopted a two-pronged strategy: we sent our questionnaire to Saudi SMEs and collected some surveys.

3.2 Variables and measures

The questionnaire is divided into two sections. The first part of the survey consisted of generic questions on the business's e-commerce adoption. The descriptive questions are intended to collect background knowledge on respondent businesses so that the data may be analyzed by area, sector, industry, employee size, and yearly revenue. In the first section, certain questions, comprising yes/no questions, were used to determine the usage of various degrees of e-commerce. In the second section, five-point scaled questions were created to assess overall performance after implementing e-commerce. This section was also created to determine how e-commerce influences affect overall performance. Five scaled responses constitute business performance improvement in five aspects—sales growth, customer base, customer satisfaction, process enhancement, and competitive advantage. Part Two's questions were focused to determining the moderating impacts of e-commerce experience and business size.

3.2.1 Dependent variable and independent variables

The dependent variable is an assessment of SMEs in Jeddah's overall performance. A variety of indicators have been used in the literature to capture firm performance. These indicators are factual, based on public sales, and other statistics (Heim and Field, 2007), or subjective, based on enterprises' self-evaluated opinions obtained through surveys (Kumar and Petersen, 2006). Although it is preferred to use published data since it is more impartial, comparable data may not even be obtainable for all businesses of interest, especially when studying SMEs. Bigger businesses that are mandated to submit annual reports are more likely to have quantitative data, whereas SMEs do not issue yearly accounts or publicize their performance. As a result, we employed self-reported performance measures in this investigation, which were comparable to those used in other studies (e.g., Kumar and Petersen, 2006). As a result, in this study, the total performance of SMEs in Saudi Arabia was examined as a combination of multiple variables for each performance given in **Table 2.** Many metrics from the literature have been used to capture the impacts of e-commerce adoption. The e-commerce effect has been quantified using five things, as mentioned in the table's second column. Each performance is represented by a different item. As previously stated, e-commerce adoption and performance were assessed on a 1–5 scale. The question on e-commerce advertising, for example, was phrased as follows in the questionnaire: "Has online advertising enhanced your overall performance?"

"Respondents were asked to click on a scale from 1 to 5, with 1 indicating "intensely worse," 3 indicating "no change," and 5 indicating "intensely better."

Area	Variables	Scales	Average
E-commerce practices	Electronic Marketing Electronic Advertising Electronic Customer Support Electronic Order and Delivery Electronic Payment System	Adoption (1 none - 5 high)	2.45
Business performance	Sales Growth Customer base Customer Satisfaction Process enhancement Competitive advantage Value improvement of services	(1 Deteriorated – 5 Improved)	3.45
Control variable	Turnover(Logarithm) Age	Continuous variable Continuous variable	86 Ml 9 years
Business Size	Firm Sales growth(Logarithm) Number of employees	Percentage Discrete variable	2.2% 100
E-commerce experience	Lengths of e-commerce use	Continuous variable	6 years

Table 2: Items used in the analysis

3.2.2 Moderator Variables

As mentioned earlier, we have used experience in e-commerce adoption and business size as two moderator variables. E-commerce experience was divided into categories, the length of e-commerce first interval of less than 1

year, the second of 1–3 years, the third of 3–5 years and the fourth of more than 5 years. The size of the businesses was measured by the number of employees with the first interval of 1–10 employees, the second of 11–50, the third of 51–100, the fourth of 101–150 and the fifth of 151–200 and annual sales revenue **Table 2**.

3.2.3 Control Variables

In this study we used two control variables which are Age of the company and the turnover and we put the Turnover in logarithm. The details are all displayed in Table 2

4 Data analysis and Results

According with questionnaires collected, 4.5 percent have not used e-commerce, while more than two-thirds have used it for more than three years (69.3 percent). The range of e-commerce adoptions varies with company. Although 86.5 percent of SMEs have their own website, just 25 percent of SMEs sell through it. We used SPSS 16 to examine the data. This mostly entails summarizing them using descriptive statistics, decreasing the variables, and integrating them into a single component using factor analysis, and assessing the link between both the dependent and independent variables with regression.

4.1 Factor analysis

Using confirmatory factor analysis, we first evaluated the dimensionality of the factors (e-commerce adoption and business performance). Table 3 contains the results. All the four items of e-commerce adoption loaded on to a single factor. Similarly, all the five items of performance loaded on to a single factor. Moreover, half of the variance in the related items was explained by the two factors. We used Cronbach alpha to examine the dependability of these three constructions. In every example, alpha values are greater than the acceptable minimum of 0.7.

Constructs	Observed Variables	Factor loadings	Cronbach's alpha	Composite reliability	Percentage of variance extracted (%)
E-commerce practice	Electronic Marketing	0.708			
	Electronic Advertising	0,794			
	Electronic Customer Support	0.821	0.757	0.854	53.65
	Electronic Order and Delivery	0.733			
	Electronic Payment System	0.632			
		0.853			
	Sales Growth	0.784			
Business Performance	Customer base	0.822			
	Customer Satisfaction	0.732	0.927	0.932	53.70
	Process enhancement	0.777			
	Competitive advantage	0.732			
	Value improvement of services				
Business Size	Firm Sales	N/A	N/A	N/A	N/A
	Number of employees				
E-commerce experience	Lengths of e-commerce use	N/A	N/A	N/A	N/A

Table 3: Results of confirmatory factor analysis and reliability analysis.

4.2 Regression analysis

To test our hypothesis, we used regression analysis with two components (performance and e-commerce adoption). First and foremost, we checked that all of the regression assumptions are met. We used the variable inflation factor (VIF) and tolerance to look for concerns with collinearity. When VIF is more than 10 and tolerance is less than 0.1, collinearity may develop. The VIF of the regressions presented below was more than 10, indicating that multi-collinearity was not a problem. We used basic multiple regression analysis to test Hypothesis 1. The performance factor is the dependent variable in the regression, as previously stated. The independent variables are e-commerce impact factors. Age and turnovers have been used to control inter-industry variances. **Table 5** shows the results. With F¼13.097and po0.01, the regression is statistically significant in examining the effects of e-commerce on Saudi Arabian SMEs performance. The R2 value is 0.306, indicating that the independent variables and the control variable account for 30.6 % of the variation in the dependent variable. This is somewhat low but the F-statistic shows that the regression results are significant. The e-commerce effect of e-commerce is highly significant to business performance with t¼4.166, $p<0.01$. The findings of regression analysis show that the effects of e-commerce have a considerable favorable influence on the overall performance of businesses. This backs up our H1 hypothesis. The e-commerce impact coefficient is statistically significant.

Table 4: Result of multiple regression analysis (dependent variable: Business performance factor)

Variables	Beta	t	Significance	VIF
Log*Turnover (control variable)	0.095	-1.088	0.279	1.002
Age (control variable)	0.176	1.442	0.231	1.122
E-commerce adoption	0.324	4.166	0.002	1.378
R2	0.306			
Adjusted R2	0.105			
F	9.048		0.000	

Note: *Logathim

4.2 Moderated Regression

Moderated regression analysis may be used to assess the moderated or interactive influence of the firm's size and e-commerce experience on its performance (Sanchez and McKinley, 2016; Bedeian and Mossholder, 2016). A dependent variable is regressed on an independent variable, a moderator variable, and a product term between the independent and moderator variables in a moderated regression. A two-stage regression is used to analyze the influence of the moderator. The dependent variable is regressed with the independent variable, moderator variable, and control variables in the first step (if any). A product term (independent moderator variable) is introduced in the second step. The influence of the moderator is measured by the difference in R2 between the first and second stages of regression. A significant moderator impact is anticipated if this change is statistically significant (Hair et al., 2016). Hair et al. (2016) go on to say that when determining the importance of the moderation effect, only the incremental effect should be considered, not the significance of individual factors. We employed two distinct moderated regression analyses with business size and e-commerce experience as moderators, as previously described. **Tables** 6 and 7 show the results of the moderated regression analysis. We confirmed that all the regression assumptions are met for these two regressions, just as we did for the prior one. The VIF values in these regressions were much below 5, showing that multi-collinearity was not an issue. The increase in R2 (0.01) in Stage 2 over Stage 1 is not statistically significant, according to the results. The product terms (experience with e-commerce impacts) are likewise unimportant. The F-test for the entire regression yields a significant F-value of po0.01, but significant F-values alone do not prove the relevance of the moderating effect (Baron and Kenny, 2013; Bedeian and Mossholder, 2016). Consequently, our findings suggest that e-impact commerce's on Saudi Arabian SMEs' performance is not considerably impacted by SMEs' e-commerce adoption experience. Our Hypothesis H2 is not supported by this finding.

Table 5: Moderated regression results with e-commerce experience as moderating variable.

Variables	**Stage 1**		**Stage 2**	
	Beta	t	Beta	t
Log* Turnover (control variable)	-0.040	-0.555	-0.052	-0.565
Age (control variable)			-0.043	-0.521
E-commerce adoption	-0.213	-0.212	0.408	2.608
E-commerce experience	0.279	2.641	0.135	1.488
E-commerce effect x experience	0.124	1.386	-0.194	-1.140
R2			0.274	
Adjusted R2	0.264		0.010	
F	8.525		5.862	

Table 6: Moderated regression results with Business size as moderating variable

Variables	**Stage 1**		**Stage 2**	
	Beta	t	Beta	t
Log*Turnover (control variable)	-0.094	-1.061	-0.062	-0.749
Age (control variable)			-0.021	-0.453
E-commerce adoption	-0.32	-0.121	0.769	4.366
Log*Business Size	0.174	3.082	0.005	0.056
E-commerce effects x Size	0.005	-0.060	0.554	-3.810
R2			0.327	
Adjusted R2	0.206		0.121	
F	6.603		8.082	

Note: *Logarithm.

The findings of a moderated regression analysis using business size as the moderator variable are shown in Table 6. In contrast to Tables 6 and 7, the size of the firm has a strong moderating effect on the correlations between e-

commerce impacts and performance. In Stage 2 regression, the product terms (e-commerce impact size) are significant. The statistically significant improvement in R2 between Stages 1 and 2 (0.121) is statistically significant (po0.01). The F-statistic also shows that the aggregate Stage 2 decline is extremely significant. These findings suggest that business size has a considerable moderating effect on the impact of e-commerce on SMEs' performance.

5. Discussion

First and foremost, our research has discovered compelling evidence for the large beneficial impact of e-commerce on overall firm performance as a result of e-commerce adoption. Unexpectedly, we presented no evidence for the moderating function of e-commerce experience; the effects of e-commerce on Saudi Arabian SMEs' performance are not significantly impacted by SMEs' e-commerce adoption experience. Nevertheless, there might be some intriguing explanations for this surprising result. This is centered on an organization's learning behavior (Senge, 2000). Not all businesses that use e-commerce platforms learn from their mistakes. Not all businesses that use e-commerce platforms learn from their mistakes. That is, it makes no difference how long a company has had e-commerce established if it does not learn (and there are many of them, especially at the SME level). The moderating effect of firm size varied for operations and marketing effects, according to our findings. E-commerce effects are moderated in a favorable way by firm size. The implementation of e-commerce has enhanced different operations of SMEs in production, marketing, sales, and distribution during the past two decades (Gunasekaran et al., 2002). The findings of our regression study show that e-commerce has a positive impact on the performance of larger businesses. In other words, incorporating e-commerce into a SME's operations minimizes complications, resulting in improved performance.

6. Conclusion and managerial implication

E-commerce and information technology can be seen as tools that help characterized primarily and improve their current operations. Using a questionnaire survey, we investigated the influence of e-commerce adoption on the performance of SMEs in Jeddah, Saudi Arabia. The way businesses operate is changing because of the internet. It influences the distribution chain as well. E-commerce services have an influence on B2C SMEs, and they should reposition themselves in response to new technologies. To stay competitive, understanding the advantages and risks of e-commerce services, as well as the capacity to use the internet in conjunction with traditional channels, will be critical. E-effects commerce's have been quantified in terms of operations and marketing effects. E-commerce impacts have a considerable favorable influence on business success, according to our findings. This finding is unique to our research because, whereas most earlier studies (Wu et al., 2016) found a positive link between e-commerce adoption and improved performance, they did not investigate the various performance impacts independently. Some of the conclusion concerning the influence of e-commerce on business performance is not in line with previous research (Li et al., 2019), but also with real-world business case studies. For example, La Jamila, an Saudi Arabian luxury underwear firm, has effectively developed the e-commerce tool on a national and worldwide level (in over 15 countries), but simply adopting e-commerce was not enough to ensure excellent economic performance. Our research reveals that e-commerce may assist SMEs enhance their business, operational, and innovation performance functions. This study used a combination of primary and secondary research to better understand the impact of e-commerce on SMEs in Jeddah, filling a gap in the literature. More study on suppliers' and customers' opinions of e-influence commerce's on the retail business is needed. We also sought to determine the moderating influence of size and e-commerce experience on SMEs' success. We discovered that SMEs' e-commerce expertise had no bearing on the impact of e-commerce on company performance using moderated regression analysis. However, the size of the company, as measured by the number of workers and sales growth, has a significant moderating effect on the impact of e-commerce on business success. E-commerce adoption has aided Saudi Arabian SMEs in improving their overall performance by making their operations and marketing activities more effective, according to one significant conclusion. This study backs up the RBV since e-commerce makes extensive use of all available resources to attain improved performance.

Despite the valuable outcomes, our research could be improved. More indicators, for example, can be used to measure marketing. Structural equation modeling may be used to investigate the interconnections between operations and marketing functions, as well as their influence on performance. Because e-commerce technologies are such a dynamic and changing area, identical surveys may be undertaken across multiple time periods and the trends analyzed through time. They provide a foundation for future study.

7. Reference

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