Contents lists available at GrowingScience

International Journal of Data and Network Science

homepage: www.GrowingScience.com/ijds

# The mediating role of customer relationship management between e-supply chain management and competitive advantage

**Abdalrazzaq Aloqool[a*], Malek Alharafsheh[b], Hadeel Abdellatif[a], Lana Ahmad Suleiman Alghasawneh[c] and Jassim Ahmad Al-Gasawneh[a]**

[a]*Applied Science Private University, Jordan*
[b]*Business Department, Business faculty, Amman Arab University, Jordan*
[c]*Department of Economics, Mysore University, India*

**C H R O N I C L E**

*Article history*:
Received: June 18, 2021
Received in revised format: June 29, 2021
Accepted: September 6, 2021
Available online: September 6, 2021

*Keywords:*
*E-SCM*
*Competitive advantage*
*CRM*

**A B S T R A C T**

The purpose of this study is to explore the role of implementing e-supply chain management (E-SCM) on the competitive position of companies and whether implementing customer relationship management (CRM) can affect the relationship between E-SCM and competitive advantage. To achieve this objective, a quantitative approach was utilized. A total of 300 questionnaires were distributed where 243 questionnaires were returned, with 17 incomplete questionnaires being excluded, leaving 226 usable questionnaires. PLS-SEM software was used to analyze the data. The results of this study demonstrate the imperative role of implementing E-SCM and CRM on creating a competitive advantage for firms. It also shows that CRM mediates the relationship between E-SCM and competitive advantage, suggesting that utilizing different technologies can help firms better communicate with their customers and thus better serve them which in turn will enhance customers' satisfaction and thus boost the competitive position of the firm.



## 1. Introduction

Companies all over the world are facing severe competition in all industries (Abdellatif, 2021). Therefore, they are thriving to generate competitive advantage to keep themselves ahead in their markets. When an organization has a competitive advantage, it is more likely to have better quality, shorter delivery time and lower prices compared to its competitors (Mentzer, et al., 2001; Liao et al., 2017). An organization might have one or more sources for competitive advantage such as; product quality, prices, operations, customers' relationship and much more (Ulaga, & Eggert, 2006; Atnafu, & Balda, 2018). The demand for higher quality products and better customer services along with lower prices is creating an intense competition between rivals. Therefore, companies found themselves forced to understand customers' requests and respond to them (Dandis et al., 2021), which leads to establishing better relationships with customers (Shukla & Pattnaik, 2019). Accordingly, maintaining this relationship is a major priority. Customer relationship management (CRM) needs to be emphasized to enhance companies' efforts in satisfying customers' needs and improving customers' services (Hayati, 2020; Hammouri et al., 2021). CRM has a lot of aspects, it is applied usually by retailers or whoever have a direct contact with customers, conjointly, it should be supported by other firms which participate in the supply chain through producing or transporting products to final customers. Products' quality is imperative to customers, so do supply chains. A supply chain (SC) extends from the firms supplying raw materials needed for production until the firms selling products to end customers. With the diffusion of internet technology; the shift towards performing work fully or partially electronically became a necessity (Hammouri & Abu-Shanab,

* Corresponding author.
E-mail address: a_aloqool@asu.edu.jo (A. Aloqool)


doi: 10.5267/j.ijdns.2021.9.002

2017); which also applies for SC. Electronic supply chain (E-SC) is concerned with applying internet technology to the practices of traditional SC (Alzoubi, 2018). E-SC is not only a technological change, but also a cultural change that affects the entire SC including business processes, management policy, performance metrics and organizational structures.

Many researchers claim that E-SC can be a source of competitive advantage for an organization (Kasemsap, 2015; Antoni et al., 2019; Bensbih et al., 2020; Al-Gasawneh et al., 2020). Competitive advantages derived from supply chain might appear in several forms like speed, services, cost, and customer relationship etc. Incorporating CRM practices into E-SC with an aim to create competitive advantage is a whole new way of thinking that include the assimilation of culture, vision and strategy in order to serve customers with higher quality, lower prices, shorter delivery time and higher dependability. This study tries to explore if implementing E-SC will affect companies' competitive advantages, and if implementing CRM can affect the relationship between E-SCM and competitive advantage.

## 2. Literature Review

### *2.1. Electronic Supply Chain Management*

The concept of E-SC was introduced after the success and popularity of e-business (Xie & Li, 2018). Technology has transformed every aspect of our lives starting from our purchasing behavior to our preferences. It has reshaped the business world; manufacturers are adopting new business models where sales are shifted from offline to online (Almajali & Hammouri, 2021; Alghasawneh et al., 2020). Unsurprisingly, traditional supply chains are affected with these huge technological advancements. E-SC is increasingly becoming a popular web-based and socio-technical interaction solution, it combines fragmented and silo-oriented processes with low cost and high-quality content and allows supply chain partners to conform with new changing and customer choices. E-SC can emphasize organizational connections and cooperation inside and outside home in order to make competitive pressures, completing tasks in a speedy manner, cutting down operating costs and thriving to exceed customers' expectations. E-SC can be defined as *"the orchestration of value chain operations across organisations through Web-based technologies"* (Liu et al., 2014, p. 2). Or *"the collaborative use of technology to enhance business-to-business processes and improve speed, agility, real-time control, and customer satisfaction"* (Jaglan, 2017, p. 104). It is basically transforming the traditional functions of SC that have long been managed manually into a digital format including all business activities starting from supplying raw materials or resources until distributing finished products (Chaffey, 2009; Blanchard, 2010; Taghipour et al., 2020).

### *2.2. Competitive Advantage*

One of the vital goals of any business strategy is to create a competitive advantage (Stonehouse et al, 2004; Haseeb, et al. 2019). Porter (1985) highlighted the importance of competition on the level of the organization, he suggested two main sources for competitive advantage; low cost and differentiation. One main definition of competitive advantage (CA) is *"the above industry average manifested exploitation of market opportunities and neutralization of competitive threats"* (Sigalas et al. 2013, p.335). Recently, business operations, procedures, and the full competitive environment has significantly changed since the introduction of the digital economy (Bharadwaj et al., 2013; Porter & Heppelmann, 2014; Koch, & Windsperger, 2017; Nusairat et al., 2021). Companies are trying to have one or more competitive advantage(s) (Kale, 2017), this depends on the availability of competencies such as advanced IT, financial leverage or HRM practices etc. (Mohammad et al. 2021), which are the sources for attaining competitive advantage(s) (Hafeez, & Malak, 2002; Wu et al., 2017; Elrehail et al., 2019).

### *2.3. Customer Relationship Management (CRM)*

CRM is defined by Anton and Hoek, (2002) as a *"marketing strategy; that incorporates activities, technology and all business processes around the customer"*. This strategy empowers companies to have a good position in the market by increasing the number of their customers and differentiating themselves from their rivals. It facilitates sales efforts and develops strong bonds with customers. A plethora of studies have been published in the field of CRM, (Al-Gasawneh et al., 2021; AL-Rawashdeh & Mamat, 2019) generated 4 factors constituting "CRM Performance" to implement CRM. These factors are Key Customer Focus, CRM Organization, Knowledge-Based CRM, CRM-Technology-Based. This "CRM Performance" will be used in this study to represent the CRM.

Alshourah et al. (2018) and Maggon and Chaudhry (2015) stated that firms who aim to succeed in applying CRM should have a customer-focus structure and a culture of reward system and policy. Moreover, Abbas Chachar and Bilal (2017) and Alshourah et al. (2018) emphasized the significance of orientating the whole company structure with detailed practices toward the precious relationships with customers. Clearly, CRM depends heavily on data collected from customers' experiences and marketing research, but this data should be transformed into knowledge. This knowledge is learned, generated, shared and has a responsiveness to the CRM systems (Shaaban & Ghoneim, 2017; Alshourah et al., 2018; Hammouri et al., 2021). The current study Followed a study by Al-Gasawneh et al. (2021) in measuring CRM where they revealed that the infrastructure and the carrier of CRM is technology. Devices, applications, networks, and software are all main pillars to apply other dimensions of CRM (customer-focus, organization and knowledge).

## 3. Hypotheses Development

### *3.1. The Relationship between E-Supply Chain Management and Competitive Advantage*

The long-term relationship between an organization and its suppliers is intended to use the vital and strategic abilities of individual organizations to assist in achieving competitive advantage (Gunasekaran, et al, 2001). It has been proved that incorporating different technological tools in SC can be a competitive method for adding value and improving SC efficiency, visibility, speed, agility, and customer satisfaction (Liu et al., 2010; Jaglan, 2017; Farouk & Darwish, 2020). The results of Le Tan & Thi Dai Trang (2017) indicated that companies who implement E-SCM will have a competitive advantage over competitors. Sinulingga et al. (2019) found that E-SCM affects company performance through competitive advantage. Accordingly, researchers propose the first hypothesis:

**$H_1$:** *E-supply chain management influences competitive advantage.*

### *3.2. The Relationship between E-Supply Chain Management and Customer Relationship Management*

Lado et al., (2011) found a relationship between a company's customer focus and some interlinked parts of SCM including financial performance and customer service. Businesses can manage operations and processing data of participants and partners (customer–suppliers) through information systems, but if the integration between partners is lost then it will be a challenge and may cause problems for suppliers-customers relationship (Le Tan & Thi Dai Trang, 2017). On the other hand, technology that supports E-SCM provides an opportunity to companies to satisfy and fulfil market needs in a short period of time (Maqbool, et al. 2014). Hence, E-SCM can facilitate coordination ‘‘in real time’’ to satisfy the final customer and maximize CRM (Minguela-Rata, Beatriz, et al., 2014). Stella Ling Sye Chee (2017) stated that in SCM, after-sale service is insignificant to customer retention. Accordingly, researchers propose the second hypothesis:

**$H_2$:** *E-supply chain management on influences customer relationship management*.

### *3.3. The Relationship between Customer Relationship Management and Competitive Advantage*

CRM and its capacities are a vital organizational competency by which an organization can face rivals and generate value to its customers (Alshura, 2018). Establishing and developing relationships with customers is essential for attaining competitive advantage as indicated by Kale (2004). Hadi (2015) found that customer attraction, customer acquisition, customer withholding and competitive advantage have a significant relationship. Park and Kim (2003) stated that committed customers are profitable to an organization for the long term. However, Hendricks et al. (2006) found that CRM systems did not provide the foundations that encourages establishing long-term relationship with customers, which is indicating a negative relationship. Accordingly, researchers propose the third hypothesis:

**$H_3$:** *Customer relationship management influences competitive advantage.*

### *3.4. The mediating role for customer relationship management between E-Supply Chain Management and Competitive Advantage*

Customer relationships are a key indicator of inter-organizational systems adoption and implementation. Many researchers claim that powerful customers could force supply chain partners to move forward to apply technology in their business (Nguyen & Waring, 2013; Martins et al., 2014; Bi, 2017). On the other hand, E-SCM could improve customers' loyalty (Le Tan & Thi Dai Trang, 2017), which is the main goal of CRM and a major proof that a company has a competitive advantage. E-SCM enables customers to participate in the process of service delivery by sharing information about new products, allowing customers to track their orders to minimize mistakes, which lead to customer satisfaction (Bi, 2017). Surprisingly, Wedysiage et al. (2021) didn't find an effect for customer satisfaction on competitive advantage. Accordingly, researchers propose the fourth hypothesis:

**$H_4$:** *Customer relationship management mediates the relationship between E-supply chain management and competitive advantage.*

## 4. Methods

### *4.1. Measurement and data collection tool*

This study aims to examine the mediating role of CRM on the relationship between E-SCM and competitive advantage in the pharmaceutical industry in Jordan. In this study, primary data was collected through utilizing a highly structured quantitative instrument, that is, a self-administered questionnaire (Saunders et al., 2009). The questionnaire consisted of two parts; the first part focused on the demographic characteristics of participants, which included general background characteristics: age, education, years of experience. While the second part included statements developed to measure major variables of the study. The variables under investigation in the current study have been selected from well-established and validated scales and divided into three categories, namely, customer relationship management dimensions (key customer focus, CRM organization,

CRM knowledge management, and CRM technology based) were adapted from (Al-Gasawneh et al., 2021). The dimension of CRM used as a unidimensional and considered as mediator variables. Competitive advantage as the dependent variable adapted from (Siahaan & Nazaruddin, 2014) used as a unidimensional construct. Finally, E-supply chain management as the independent variable adapted from (Che & Chiou, 2006) also has been considered as a unidimensional construct. Concerning the pre-test of the questionnaire and as a fulfilment of the face and content validity requirements, the questionnaire was sent to a panel of expertise from both high-profile academicians and Pharmacist in Jordan, in which their comments have been considered. With respect to the variables' internal consistency (Cronbach's Alpha), all utilized variables exceeded 0.70. To overcome the issue of common method variance; measures were taken from different sources.

### *4.2. Sampling*

The target population was 21 Jordanian pharmaceutical companies operating in the capital of Jordan, Amman city. Hence. The sampling frame consists of (14230) employees working at different managerial levels (top, middle, and low management personnel) in 21 pharmaceutical companies. The sample was selected using a stratified random sampling technique. This sampling technique was used for several reasons; it enhances the representation of a specific strata (groups) within the sampling frame. In which the whole population can be precisely reflected by the sample based on the criteria used for stratification (Zikmund et al., 2013). Subsequently, approaching more realistic results that can be generalized to the whole population. The study has been carried out at the individual level of analysis which is represented by employees who work in top, middle, and low management levels in pharmaceutical companies. The indicated sample size is according to the power of analysis, which is the smallest number of samples based on the complexity of the model. The minimal sample size for this publication was chosen at 74, using Green's (1991) table and two predictors from the research framework with a medium impact size, as proposed by Gefen et al. (2011). According to (Hair, 2010), to collect correct data.

## 5. Results

A total of 243 surveys were received, with 17 surveys being deleted as they were inadequate, leaving 226 useable questionnaires.

### *5.1. CFA of the Model*

Items were used to measure the six first-order constructions in (KCF, ORG, KLM, TKB, E-SPC, CA) and one second order construct. The study employed confirmatory factor analysis, as well as a two-stage technique to analyse the second order construct, to evaluate the measurement model of the research model. The measuring model is depicted in figure 5.1.

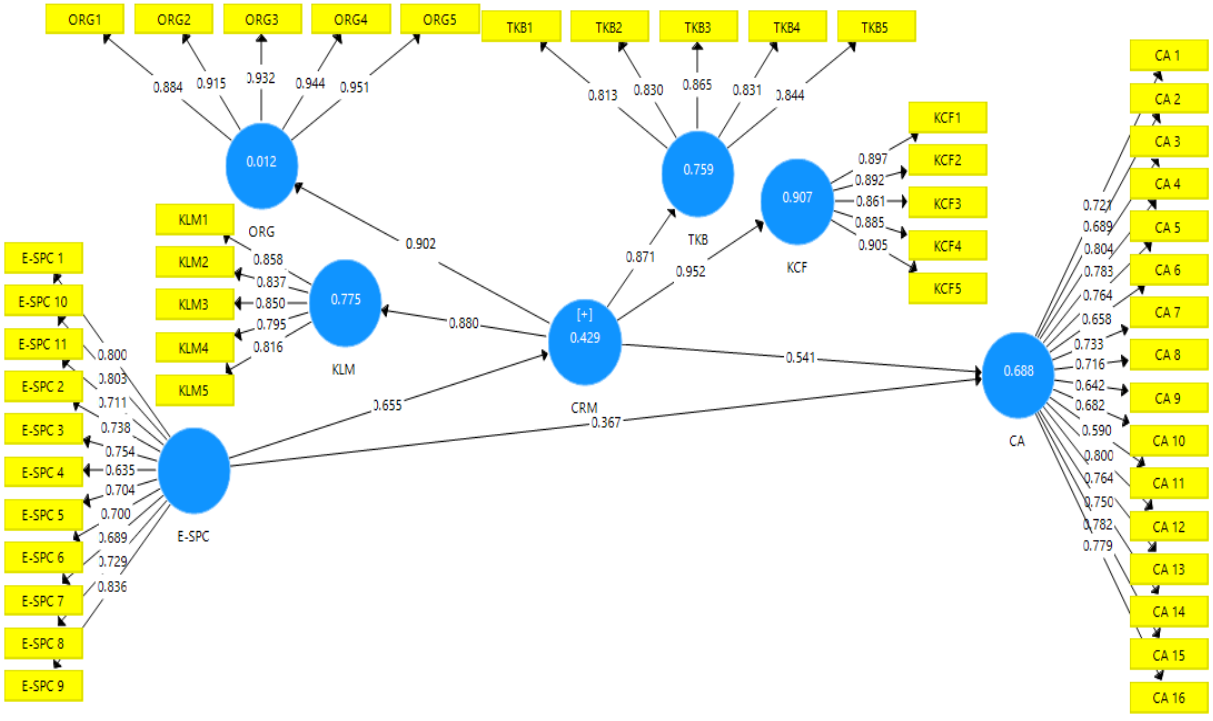


**Fig. 1.** The measurement model

### *5.1.1. Convergent Validity*

**Table 2**
The CFA Model's Result

| Construct | Item | factor loading | CR | AVE |
|---|---|---|---|---|
| Key customer focus | KCF1 | 0.897 | 0.947 | 0.78 |
| | KCF2 | 0.892 | | |
| | KCF3 | 0.861 | | |
| | KCF4 | 0.885 | | |
| | KCF5 | 0.905 | | |
| CRM knowledge management | KLM1 | 0.884 | 0.923 | 0.705 |
| | KLM2 | 0.915 | | |
| | KLM3 | 0.932 | | |
| | KLM4 | 0.944 | | |
| | KLM5 | 0.951 | | |
| CRM organization | ORG1 | 0.858 | 0.946 | 0.778 |
| | ORG2 | 0.837 | | |
| | ORG3 | 0.850 | | |
| | ORG4 | 0.795 | | |
| | ORG5 | 0.816 | | |
| CRM based- Technology | TKB1 | 0.813 | 0.918 | 0.692 |
| | TKB2 | 0.830 | | |
| | TKB3 | 0.865 | | |
| | TKB4 | 0.831 | | |
| | TKB5 | 0.844 | | |
| E-Supply chain MGT (E-SCM) | E-SPC 1 | 0.800 | 0.930 | 0.728 |
| | E-SPC 2 | 0.838 | | |
| | E-SPC 3 | 0.754 | | |
| | E-SPC 4 | 0.635 | | |
| | E-SPC 5 | 0.704 | | |
| | E-SPC 6 | 0.700 | | |
| | E-SPC 7 | 0.689 | | |
| | E-SPC 8 | 0.729 | | |
| | E-SPC 9 | 0.836 | | |
| | E-SPC 10 | 0.803 | | |
| | E-SPC 11 | 0.711 | | |
| Competitive advantage (CA) | CA 1 | 0.721 | 0.910 | 0.718 |
| | CA 2 | 0.689 | | |
| | CA 3 | 0.804 | | |
| | CA 4 | 0.783 | | |
| | CA 5 | 0.764 | | |
| | CA 6 | 0.658 | | |
| | CA 7 | 0.733 | | |
| | CA 8 | 0.716 | | |
| | CA 9 | 0.642 | | |
| | CA 10 | 0.682 | | |
| | CA 11 | 0.590 | | |
| | CA 12 | 0.800 | | |
| | CA 13 | 0.764 | | |
| | CA 14 | 0.750 | | |
| | CA 15 | 0.782 | | |
| | CA 16 | 0.769 | | |
| Second order | KCF | 0.952 | 0.906 | 0.776 |
| | ORG | 0.902 | | |
| | KLM | 0.800 | | |
| | TKB | 0.871 | | |

The study of the confirmatory factor for the models is shown in Table 2. Evaluation outcomes can also be obtained from the standardized factor loading of the models. Results reveal that the standardized loadings of the factor were above 0.5, with loads between 0.590 and 0.952. Furthermore, AVE values were 0.692 to 0.780 for all structures. The cutoff is 0,5 based on Hair et al (2019) work, and all these values are higher than this. For all constructions, composite confidence ratings ranged from 0.906 to 0.946, all reached above the intended threshold of 0.7 for all constructs as stated in (Hair et al., 2019).

### *5.2. Discriminant Validity*

The purpose of this study was to gather HTMT to develop the model's discrimination as mentioned (Henseler, 2015).

**Table 3**
The HTMT for constructs

| | KCF | ORG | KLM | TKB | CRM | E-SCM | CA |
|---|---|---|---|---|---|---|---|
| KCF | | | | | | | |
| ORG | 0.250 | | | | | | |
| KLM | 0.777 | 0.296 | | | | | |
| TKB | 0.830 | 0.345 | 0.788 | | | | |
| CRM | 0.889 | 0.876 | 0.652 | 0.739 | | | |
| E-SCM | 0.714 | 0.378 | 0.817 | 0.654 | 0540 | | |
| CA | 0.790 | 0.299 | 0.697 | 0.747 | 0.661 | 0.712 | |

Table 3 reveals that all HTMT construct values were below 0.90; in particular, from 0.250 to 0.889. Thus, every latent measurement of the construction was completely discriminatory (Henseler et al., 2015). The measuring scale used for measuring the buildings and their respective parts in the CFA model is judged to be totally reliable and valid, based on an examination of the convergent validity and discriminant validity of the measurement model.

*5.3. Hypothesized Direct Effects of the Constructs in Structural Model*

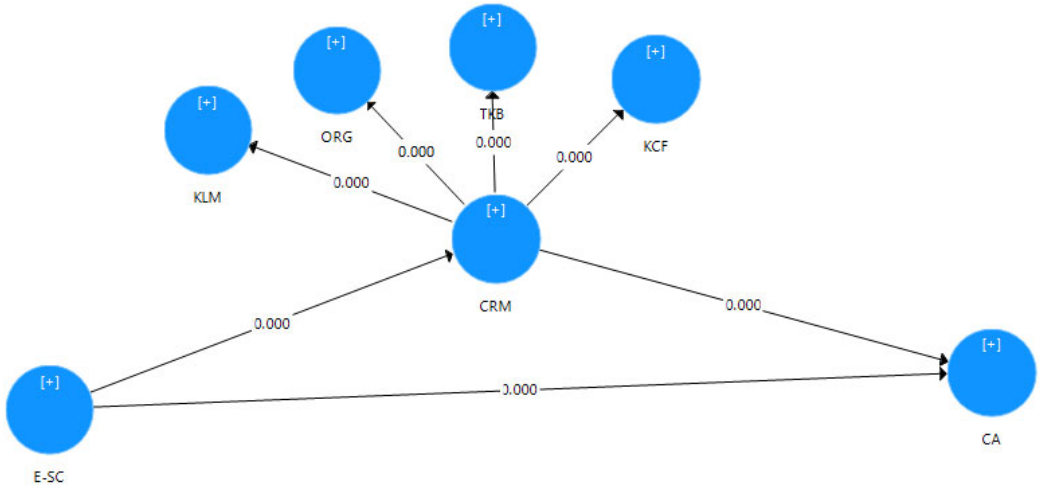


**Table 4**
Hypothesized Direct Effects Structural Model

| Path | St, β | St. d | $R^2$ | $Q^2$ | $F^2$ | VIF | T-value | P-value |
|---|---|---|---|---|---|---|---|---|
| E-SCM → CA | 0.541 | 0.166 | 0.688 | 0.351 | 0.243 | 1.754 | 3.259 | 0.000 |
| E-SCM→ CRM | 0.655 | 0.184 | 0.429 | | 0.277 | 1.933 | 3.559 | 0.000 |
| CRM → CA | 0.337 | 0,095 | | | 0.423 | 1.761 | 3.968 | 0.000 |

In Table 4 CRM's R2, CA values are presented correspondingly as 0.688 and 0.429. This indicates that the predictors (E-SCM) show 42,9% of CRM variations, whilst their predictors show 68,8% of CA variations (CRM, E-SCM). The results for R2 satisfy the value of 0.19, as proposed in the (Chin, 1998). The Q2 value for CA was 0.351, which is more than zero, indicating that the model has predictive significance similar to the proposals of (Chin, 2010). The model has a good level of fit and a high predictive relevance. In addition, the VIF values were 1.754 and 1.933, both of which were less than 5. (Hair, 2014). The p-values of E-SCM and CRM for predicting CA were 0.000 and 0.000, respectively. The p-value of E-SCM for CRM predictive components was 0.000, indicating that the likelihood of attaining prediction through absolute p-values is between 0.01 and 0.05. This demonstrates that the correlations are positive, and the hypotheses H1, H2, and H3 are supported.

*5.4. The constructions' indirect effect*

**Table 5**
Hypotheses Testing Results for Mediation

| PATH SHAPE | St. β | St. d | T values | 2.50% | 97.50% | p-values |
|---|---|---|---|---|---|---|
| E-SCM → CRM → CA | 0.265 | 0.107 | 2.476 | 0.046 | 0.371 | 0.020 |

Table 5 displays the Bootstrapping results, which demonstrate that the indirect impact of E-SCM on CA via CRM was positive and statistically significant at the 0.05 level = 0.265, T-value = 2.476, P-value = 0.020. The indirect impact of Boot CI Bias Corrected did not straddle a 0, indicating the presence of a mediation effect (Preacher & Hayes, 2004, 2008); LL = 0.046, UL = 0.371. The findings revealed that the mediation effect was statistically significant, indicating that hypothesis H4 was supported.

## 6. Discussion

The main objective of this study was to investigate the role of E-SCM might play in affecting companies' competitive advantages, and if implying CRM can affect the relationship between E-SCM and competitive advantage. A model by Al-Gasawneh et al. (2021) was utilized to examine the four study hypotheses proposed in this study. Results demonstrated that all hypotheses were supported. The first hypothesis (H1) relating E-SCM and competitive advantage was supported. This conforms to the findings of previous empirical studies reported in the literature (Liu et al., 2010; Jaglan, 2017; Farouk & Darwish, 2020). Several studies claimed that incorporating different technological tools into SC can be a source of competitive advantage over competitors (Le Tan & Thi Dai Trang, 2017; Sinulingga et al., 2019).

Regarding the second hypothesis (H2) relating E-SCM and CRM, it was supported. This result is in line with previous research findings; many studies reported that incorporating technological tools into SC can facilitate the cooperation with customers by satisfying their needs, communicating with them in a real time manner and thus maximizing CRM (Maqbool, et al. 2014; Minguela-Rata, Beatriz et al., 2014). Further, our results support the third hypothesis (H3) relating CRM and competitive advantage. This result is in the same vein with various studies which claimed that creating and maintaining long-term relationships with customers can create a competitive advantage (Hadi, 2015; Alshura, 2018), which demonstrates that implementing CRM can help firms to better serve their customers and thus be a source of sustainable competitive advantage (Al Karim and Habiba, 2020). Finally, regarding the last hypothesis (H4) relating the mediating role of CRM on the relationship between E-SCM and competitive advantage, it was also supported. This particular result supports the findings of previous empirical studies which claim that strong relationships with customers can encourage firms to incorporate more technological tools into their supply chains which in turn will improve their competitive position in the market (Martins et al., 2014; Le Tan & Thi Dai Trang, 2017).

## 7. Conclusion

The results of this study demonstrate the imperative role of implementing E-SCM and CRM on creating a competitive advantage for firms. It also shows that CRM mediates the relationship between E-SCM and competitive advantage, suggesting that utilizing different technologies can help firms to better communicate with their customers and thus better serve them which in turn will enhance customers' satisfaction and thus boost the competitive position of the firm.

## 8. Theoretical Contribution

The findings of this study support the existing literature on the relationship between E-SCM and competitive advantage. It further suggests that this relationship is mediated by CRM. Thus, this study provides valuable insights into how CRM and E-SCM capabilities can be utilized to enhance the competitive position of firms.

## 9. Practical Implication

The findings of this study bear several important practical implications. Firms are required to be aware of the significant role of incorporating different technological tools into their supply chains which will boost their ability to serve their customers and thus be able to satisfy them which in turn will create a sustainable competitive advantage. Thus, practitioners must focus on enhancing both their CRM capabilities and E-SCM capabilities which will significantly impact their competitive position.

## 10. Limitation & Future Recommendation

This study suffered from some limitations regarding sampling producers and sampling size, which may affect the generalizability of the results. However, this limitation could be avoided in future studies by applying probability sampling to recruit respondents to improve the generalizability of the results. Further, this study could be extended to consider other factors that might mediate the relationship between E-SCM and competitive advantage.

## References

Abdellatif, H. (2021). Green Recruitment as a Facilitator for Adoption of Green Supply Chain Management: Case Studies from a Developing Country. *Journal of Legal, Ethical and Regulatory Issues, 24*(1).

Al Karim, R., & Habiba, W. (2020). Effects of CRM Components on Firm's Competitive Advantage: A Case on Bangladesh Banking Industry. *Management Research Spectrum, 10*(1), 1-7

Al-Gasawneh, J. A., Anuar, M. M., Dacko-Pikiewicz, Z., & Saputra, J. (2021). The impact of customer relationship management dimensions on service quality. *Polish Journal of Management Studies, 23*(2).

Al-Gasawneh, J., Al-Wadi, M., Al-Wadi, B., Alown, B. & Nuseirat, N. (2020). The Interaction Effect of Comprehensiveness Between social media and Online Purchasing Intention in Jordanian Pharmacies. International Association of Online Engineering. Retrieved October 13, 2020 from https://www.learntechlib.org/p/217794/

Alghasawneh, L. A. S., Akhorshaideh, A. H., Alharafsheh, M., Ghasawneh, A., Al-Gasawneh, J. A., & Al-Hadid, A. Y. (2021). Determinants of Supply Chain Management Practices in Jordanian Pharmaceutical Firms. *Solid State Technology, 64*(2), 2986-3001.

Almajali, D. A., & Hammouri, Q. (2021). Predictors of Online Shopping During Covid-19 Pandemic in Developing Country: Qualitative Analysis. *Annals of the Romanian Society for Cell Biology, 25*(6), 12970-12977.

AL-Rawashdeh, G. H., & Mamat, R. B. (2019). Comparison of four email classification algorithms using WEKA. *International Journal of Computer Science and Information Security (IJCSIS), 17*(2), 42-54.

Alshura, M. S. (2018). Customer relationship management (CRM) capabilities & building a sustainable competitive advantage in mobile phone operators in Jordan. *International Journal of Business and Management, 13*(3), 262-269.

Alzoubi, H. (2018). The role of intelligent information system in e-supply chain management performance. *International Journal of Multidisciplinary Thought, 7*(2), 363-370.

Anton, J. and Hoeck, M. (2002). E-Business Customer Service. Santa Monica, CA: The Anton Press.

Atnafu, D., & Balda, A. (2018). The impact of inventory management practice on firms' competitiveness and organizational performance: Empirical evidence from micro and small enterprises in Ethiopia. *Cogent Business & Management, 5*(1), 1503219.

Bharadwaj, A., El Sawy, O. A., Pavlou, P. A., & Venkatraman, N. (2013). Digital business strategy: toward a next generation of insights. *MIS Quarterly, 37*(2), 471-482.

Bi, R. (2017). E-Supply Chain Coordination and SME Performance: An Empirical Investigation. *Electronic Journal of Information Systems Evaluation, 20*(2), pp76-84.

Chen, C., Leu, J., & Chiou, C. (2006), The Impact of E-Supply Chain Capability on Competitive Advantage and Organizational Performance. *International Journal of Electronic Business Management, 4*, 419-427.

Dandis, A. O., Wright, L. T., Wallace-Williams, D. M., Mukattash, I., Al Haj Eid, M., & Cai, H. (2021). Enhancing consumers' self-reported loyalty intentions in Islamic Banks: The relationship between service quality and the mediating role of customer satisfaction. *Cogent Business & Management, 8*(1), 1892256.

Elrehail, H., Harazneh, I., Abuhjeeleh, M., Alzghoul, A., Alnajdawi, S., & Ibrahim, H. M. H. (2019). Employee satisfaction, human resource management practices and competitive advantage: The case of Northern Cyprus. *European Journal of Management and Business Economics*, *29*(2).

Gunasekaran, A., Patel, C., & Tirtiroglu, E. (2001). Performance measures and metrics in a supply chain environment. *International Journal of Operations & Production Management*, *21*(1/2), 71–87

Hadi, W. E. (2015). The relationship between CRM strategies stage on competitive advantage: An analytical perspective. *International Journal of Business and Management, 10*(8), 245.

Hafeez, K., Zhang, Y., & Malak, N. (2002). Core competence for sustainable competitive advantage: A structured methodology for identifying core competence. *IEEE Transactions on Engineering Management, 49*(1), 28-35.

Hammouri, Q., & Abu-Shanab, E. (2017, May). The antecedents of trust in social commerce. In 2017 8th International Conference on Information Technology (ICIT) (pp. 648-652). IEEE.

Hammouri, Q., Al-Gasawneh, J. A., Nusairat, N. M., Hanandeh, A., & Barakat, S. (2021). The Determinants of Trust and its Influence on Online Buying Intention: An Empirical Study on Social Commerce in Jordan. *Annals of the Romanian Society for Cell Biology*, 4522-4539.

Hammouri, Q., Majali, T., Almajali, D., Aloqool, A., & AlGasawneh, J. A. (2021). Explore the Relationship between Security Mechanisms and Trust in E-Banking: A Systematic Review. *Annals of the Romanian Society for Cell Biology, 25*(6), 17083-17093.

Haseeb, M., Hussain, H. I., Kot, S., Androniceanu, A., & Jermsittiparsert, K. (2019). Role of social and technological challenges in achieving a sustainable competitive advantage and sustainable business performance. *Sustainability, 11*(14), 3811.

Hayati, S., Suroso, A., Suliyanto, S., & Kaukab, M. (2020). Customer satisfaction as a mediation between micro banking image, customer relationship and customer loyalty. *Management Science Letters, 10*(11), 2561-2570.

Jordanian Association of Pharmaceutical Manufactures (JAPM) (2014). Pharmaceutical Industry Data Bank, Amman, Jordan, Website: http// www.JAPM.com

Kale, S. (2004). CRM failure and the seven deadly sins. *Marketing Management, 13*(5), 42-46

Kale, V. (2017). *Agile network businesses: collaboration, coordination, and competitive advantage*. CRC Press.

Koch, T., & Windsperger, J. (2017). Seeing through the network: Competitive advantage in the digital economy. *Journal of Organization Design, 6*(1), 1-30.

Lado, A.A., Paulraj, A., & Chen, I.J. (2011). Customer focus, supply-chain relational capabilities and performance: Evidence from US manufacturing industries. *The International Journal of Logistics Management, 22*(2), 202 – 221.

Le Tan, T., & Thi Dai Trang, D. (2017). Issues of implementing electronic supply chain management (E-SCM) in enterprise. *European Business & Management, 3*(5), 86-94.

Liao, S. H., Hu, D. C., & Ding, L. W. (2017). Assessing the influence of supply chain collaboration value innovation, supply chain capability and competitive advantage in Taiwan's networking communication industry. *International Journal of Production Economics, 191*, 143-153.

Maqbool, S., Rafiq, M., Lecturer, S., Imran, M. U. H. A. M. M. A. D., Qadeer, A. B. D. U. L., & Abbas, T. A. J. A. M. M. A. L. (2014). Creating competitive advantage through Supply Chain Management (Role of Information & Communication Technology in Supply Chain Management to create competitive advantage: a literature base study*). International Journal of Research in Commerce, IT & Management, 4*(2), 47-52.

Martins, C., Oliveira, T., & Popovič, A. (2014). Understanding the Internet banking adoption: A unified theory of acceptance and use of technology and perceived risk application. *International Journal of Information Management, 34*(1), 1-13.

Mentzer, J.T., DeWitt, W., Keebler, J.S., Min, S., Nix, N.W., Smith, C.D. and Zacharia, Z.G. (2001). Defining supply chain management. *Journal of Business Logistics, 22*(2), 1-25.

Minguela-Rata, B., Arias-Aranda, D., & Opazo-Basáez, M. (2014). Processes Integration and e-Business in Supply Chain Management. In *Handbook of Strategic e-Business Management* (pp. 217-236). Springer, Berlin, Heidelberg.

Mohammed, S. M. M., Abdalrazzaq Aloqool, A. H. O. A., AlGasawneh, J. A., Hammouri, Q., & Nusairat, N. M. (2021). Work Ethics and Corporate Social Responsibility: The Mediating Role of Marketing Competence. *Annals of the Romanian Society for Cell Biology, 25*(6), 17647-17665.

Nguyen, T. H., & Waring, T. S. (2013). The adoption of customer relationship management (CRM) technology in SMEs: An empirical study. *Journal of Small Business and Enterprise Development, 20*(4).

Nusairat, N., Al-Gasawneh, J., Aloqool, A., Alzubi, K., Akhorshaideh, A., Joudeh, J., & Ibrahim, H. (2021). The relationship between Internet of things and search engine optimization in Jordanian Tele-Communication Companies: The mediating role of user behavior. *International Journal of Data and Network Science, 5*(3), 163-172.

Park, C. H., & Kim, Y. G. (2003). A Framework of Dynamic CRM: Linking Marketing with Information Strategy. *Business Process Management Journal, 9*(5), 652-671. http://dx.doi.org/10.1108/14637150310496749.

Porter, M. E., & Heppelmann, J. E. (2014). How smart, connected products are transforming competition. *Harvard Business Review, 92*(11), 64-88.

Porter, M. E. (1985). *Competitive Advantage: Creating and Sustaining Superior Performance*. New York: The Free Press.

Shukla, M. K., & Pattnaik, P. N. (2019). Managing customer relations in a modern business environment: towards an ecosystem-based sustainable CRM model. *Journal of Relationship Marketing, 18*(1), 17-33.

Sigalas, C., Economou, V. P., & Georgopoulos, N. B. (2013). Developing a measure of competitive advantage. *Journal of Strategy and Management, 6*(4).

Sinulingga, S., Napitupulu, H., & Matondang, N. (2019, May). Disruption innovation, electronic supply chain management in improving the competitive advantage and the company performance. *In IOP Conference Series: Materials Science and Engineering (Vol. 505, No. 1, p. 012131). IOP Publishing.*

Stella Ling Sye Chee (2017), The Effect of Supply Chain Management on Customer Retention among General Practitioners in Perak: A Case-Study of International Pharmaceutical Company, Master of Business Administration (Corporate Management), Universiti Tunku Abdul Rahman, Faculty of Business And Finance

Stonehouse, G., Campbell, D., Hamill, J., & Purdie, T. (2004). *Global and Transnational Business: Strategy and Management*. John Wiley & Sons Ltd., 2nd Edition, ISBN 9812-53-132-7, pp 4-7, 158-188, 2004

Ulaga, W., & Eggert, A. (2006). Value-based differentiation in business relationships: Gaining and sustaining key supplier status. *Journal of Marketing, 70*(1), 119-136.

Wedysiage, M., Hatane, S., & Deviesa, D. (2021). Corporate Social Responsibility and Competitive Advantage: The Evaluation of the Mediation role of Employee Commitment and Customer Satisfaction, (Study on Manufacturing Companies in Surabaya). *Petra International Journal of Business Studies, 4*(1), 1-10.

Wu, K. J., Tseng, M. L., Chiu, A. S., & Lim, M. K. (2017). Achieving competitive advantage through supply chain agility under uncertainty: A novel multi-criteria decision-making structure. *International Journal of Production Economics, 190*, 96-107.