

Uncertain Supply Chain Management

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Implementation of e-commerce in supply chain management

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ABSTRACT

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Supply chain management has attracted business interest in recent years. This interest is also driven by the development and spread of e-commerce technology. Because e-commerce is a relatively new phenomenon in business, little research has been done on its impact on supply chain relationships. E-commerce allows supply chain management to make collective decisions considering the interests of relationships with diverse and often competitive trading partners. The e-commerce environment is difficult to predict due to the vast availability of information and changing market dynamics. Management can deal with uncertainty more effectively when focusing on administrative partnerships as part of their corporate strategy. This quantitative and qualitative study with e-commerce businesspeople aims to: 1) highlight the strategic and tactical importance of supply chain assessment in e-commerce; and 2) describe future research opportunities in this new multidisciplinary approach.

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1. Introduction

Supply Chain Management (SCM) strategy is a form of the trade relationship that works together to ensure the “right customers”, “right quantities”, and at the “right time” to obtain the goods and services they need for business activities. The term “Demand Chain Management” (DCM) with SCM in the era of digitalization has become increasingly popular (Ganji et al., 2018; Ye & Lau, 2018). A supply chain is described as multiple businesses directly connected to one or more products, services, revenues, and data from multiple sources (Klassen & Vereecke, 2012). Supply chain management is the management of organizational interactions and activities, from single transactions to complex interactions being an example of this business relationship. As the business world becomes complex, entrepreneurs realize that strong long-term relationships can benefit business activities (Lumpkin et al., 2010; Spigel & Harrison, 2018). Supply chain management aims for business actors to collaborate in long-term partnerships to increase competitive business for the supply chain (Cheng, 2011). The main proposition of SCM is that when business actors collaboratively optimize all links in the supply chain, performance will increase compared to total revenue when links are optimized individually (Paksoy & Özceylan, 2014). It is critical to achieving this goal through the simultaneous integration of all supply chain connections. Technological advances in information systems have the potential to make integration easier, thus enabling integration across the entire supply chain. E-commerce is a new term used to describe the emphasis on supply chain development in online-based businesses. E-commerce is related to business activities that create sustainable supply chain development. E-commerce provides enhancements for SCM decision-making by providing real-time information, broad access, and precise data analysis, and enables business partners in the supply chain to collaborate effectively (Tay & Loh, 2022; W., 2015; Zhong et al., 2016). The development of e-commerce has become a major issue for commercial organizations, helping to overcome time and distance problems for business transactions (Agarwal & Wu, 2015; Ittmann, 2015). E-commerce requires the development of new management concepts and methodologies to automate entire business systems (Yu et al., 2017). The availability of search

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engines is an effective link for online businesses, thus allowing targeted buyers to quickly find what they are looking for and get information about what consumers want. Artificial intelligence systems implemented into the operation of e-commerce platforms affect business activities, such as planning, acquisition, delivery, and business effects on SCM. There is some relationship between integrated artificial intelligence systems and connected SCM for information sharing.

The e-commerce business environment presents several challenges for supply chain management for businesses online. Supply chain coordination is facing new challenges as it creates many businesses that shift their business through online business. As a result of these new activities, supply chain management partnerships will experience new business models and structural changes. As SCM is becoming a major challenge for management today, the explosion in the development and acceptance of e-commerce technologies will generate great interest in combining these two disciplines. Indeed, every business actor has been downsizing his SCM activities recently. For example, electronic procurement technologies that automate business purchasing processes produce fast and measurable results (Vaidya & Campbell, 2016). Vendor Managed Inventory (VMI) through an automated point-of-sale system is an essential component of manufacturers' successful customer administration partnership (Govindan, 2013). Business-to-business (B2B) exchanges to accelerate SCM integration benefit European manufacturers significantly (Kang et al., 2021). The e-commerce market conditions create new challenges for businesses as they seek business success to control the supply chain of their business. Because this phenomenon is still very new in Indonesia, few studies examine the influence of e-commerce on business management partnerships. We conducted quantitative and qualitative studies to see business development through e-commerce by considering the new environment and managing its business supply chain relationships in these unique conditions. This study aims to provide a basic theory about the influence of e-commerce on supply chain management partnerships based on the results of recent research in e-commerce partnerships and SCM.

The quantitative descriptive approach is explained in detail through the relationship between the independent and dependent variables, and the qualitative through grounded theory will also be explained in detail in the following section. The environmental implications of management partnerships, as stated by the organizations researched and supported by the theory of administration and resource dependence, will be discussed in detail in later sections of this article. After that, we will discuss conclusions about the implementation of e-commerce through searching data obtained from businesses run by informants and previously published research. Next, we discuss the consequences of this research for academics and practitioners, looking at the results of this study. Finally, the limitations of the current study and potential future studies are also discussed.

2. Method

2.1 Quantitative method

The research for the initial data uses a quantitative descriptive approach with a causal correlation type, meaning that the relationship between the independent and dependent variables is a cause-and-effect relationship (Johnson, 2001). The population for this quantitative data is all people who carry out business activities with an e-commerce system; the sampling technique is determined by purposive sampling. The number of samples is 20 e-commerce actor businesses, considering that this number already represents the characteristics of actor businesses that sell online. Techniques Analysis of quantitative data obtained from the questionnaire results using multiple regression. Multiple linear analysis of independent variables (X) was conducted to see the effect of efficiency, accessibility, information availability, supply chain design, and unpredictability dimensions on the business actors' dependent variable (Y). Before performing multiple regression testing, the regression test requirements must be met. The general form of the model to be used:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + e$$

Information: Y = Business actors' variable

X_1 = Dimension of efficiency

X_2 = Dimension of accessibility

X_3 = Dimension of information availability

X_4 = Dimension of supply chain design

X_5 = Dimension of unpredictability

a = Constant Value

b = Regression coefficient value

2.2 Qualitative Method

After conducting quantitative research, it is followed by an empirical study to understand the influence of supply chain management partnerships on e-commerce. It is based on theory to better understand this new phenomenon being investigated. The reliability of the data is collected directly from some samples from quantitative research by looking at the results of quantitative data. This descriptive analysis provides important theoretical relationships between themes and significant

consequences for research and practice. The grounded theory approach is useful for understanding business processes between the business actors in responding to and adapting to offline and online changes (Service, 2009); this is a good technique to see the new phenomenon of e-commerce.

Primary data collection techniques for grounded theory include observation, interviews, and study of relevant literature (Service, 2009). Data analysis is repeated at each data collection stage, and new developments are categorized into themes that are then incorporated into theory (Swan, 1985). Interviews were conducted for this study, the results of the study of businesspeople were studied, and the literature on e-commerce and SCM were evaluated. Businesspeople are the unit of analysis in this research, and informants are selected to reveal a new incident. Ten e-commerce business actors agreed to participate in this study; 10 in-depth interviews were conducted with informants related to supply chain management. Eight informants were recommended by McCracken (1988) for various research topics; hence the size of the research informants is sufficient to explore the effect of e-commerce on supply chain interactions. The study team developed procedures for conducting interviews, then peer-evaluated the topics of interest. Initially, interview questions were made comprehensive to maintain flexibility; as the interview progressed, they became more and more concentrated. All interviews were conducted by three study team members and recorded for further transcription. Each interview begins with an introduction and demographic data collection questions. This fosters a relationship between interviewers and informants while also understanding the purpose of the study (Service, 2009); all responses are guaranteed anonymity. A question often asked is, "How is your business developing in e-commerce?". The guide contains questions about how information is collected, what it is used for, what variables affect supply chain management partnerships, how success is determined, and other things during the interview. Researchers make field notes to record thoughts, emotions, observations after the interview, or insights from informants. Interviews were conducted until theoretical saturation was reached, and no new information was obtained from the interviews. For triangulation of results, interview transcripts and field notes, as well as scientific articles in the field of supply chain management.

Data analysis begins immediately after the first interview and continues throughout the data collection phase, allowing the developing theory to explore new research areas. Data were analysed using the grounded theory methodology (Service, 2009). Interview transcripts, memorandums, field notes, and previous research were classified, labelled, and studied. One study team member independently collected and classified more than 30 pages of interview transcripts and entrepreneur notes, resulting in 15 categories of significance. After that, the researchers reconciled their code, resolving initial disagreements by consensus.

3. Results

3.1 The characteristics of the e-commerce

The influence of the independent variables, namely the dimensions of efficiency, accessibility, information availability, supply chain design, and unpredictability, on the dependent variable (Y) of business actors is known through multiple linear regression calculations. Based on the results of data processing using the SPSS 23 program, the data obtained in table 1 below:

Table 1
Results of Multiple Linear Regression Analysis

| Variable | Coef.Reg | t. count | Probability | r ² Partial |
|--|----------|----------|-------------|------------------------|
| Efficiency (X ₁) | 0.137 | 3.131 | 0.002 | 0.307 |
| Accessibility (X ₂) | 0.070 | 1.284 | 0.202 | 0.131 |
| Information availability (X ₃) | 0.027 | 0.388 | 0.699 | 0.040 |
| Supply chain design (X ₄) | 0.148 | 2.523 | 0.013 | 0.025 |
| Unpredictability (X ₅) | 0.159 | 1.968 | 0.005 | 0.199 |
| Constant : 1.998 | F. Ratio | : | 68.223 | |
| R square : 0.784 | Prob. | : | 0.000 | |
| Multiple R: 0.885 | n | : | 100 | |

The first hypothesis partially states the dimensions of efficiency, accessibility, information availability, supply chain design, and unpredictability of the dependent variable (Y) business actors. The test is carried out by confirming the t-count value with the t-table value at degrees of freedom (df.=38).

1. The t-count value for the efficiency variable is 3.131 > the t-table value (df.=94) is 1.960; So, it can conclude that Ho is rejected, Ha is accepted, which means that the efficiency dimension partially affects the business actors.
2. The t-count value for the accessibility variable is 1.284 < the t-table value (df.=94) is 1.960; so, it is concluded that Ho is accepted, Ha is rejected, which means that the accessibility dimension does not partially have a significant effect on business actors.
3. The t-count value for the information availability variable is 0.388 < the t-table value (df.=94) is 1.960; so, it is concluded that Ho is accepted, Ha is rejected, which means that the information availability dimension does not partially have a significant effect on business actors.

4. The t-count value for the supply chain design variable is $2.523 >$ the t-table value (def.=94) is 1.960; So, it can conclude that H_0 is rejected, H_a is accepted, which means that the supply chain design dimension has a partial effect on business actors.
5. The t-count value for the unpredictability variable is $1.968 >$ the t-table value (def.=94) is 1.960; so, it can conclude that H_0 is rejected, H_a is accepted, which means that the dimension of unpredictability has a partial effect on business actors.

The data shows that the dimensions of efficiency, accessibility, information availability, supply chain design, and unpredictability simultaneously affect business actors. The test is carried out by confirming the F-count value with the F-table value at def. $(5)(94)$. Table 1 shows the F-count value of $68.223 >$ F-table on def. $(5)(94)$ of 2,364; so, it can conclude that H_0 is rejected, and H_a is accepted, which means that the dimensions of efficiency, accessibility, information availability, supply chain design, and unpredictability have a simultaneous effect on business actors in e-commerce activities in Indonesia. In addition, the magnitude of the influence of these five variables is 0.784, or 78.4% of the business actor's variable is influenced by the dimensions of efficiency (X1), accessibility (X2), information availability (X3), supply chain design (X4), and unpredictability (X5). The remaining 21.6% (100%-78.4%) is influenced by other variables not included in the research model. The regression coefficient shows the influence of each independent variable (X1, X2, X3, X4, X5) on the dependent variable (Y) if the size of the other independent variables is in the fixed model. Table 1 shows the results of multiple linear regression analysis; it can see that the largest regression coefficient value is the efficiency dimension (physical evidence), as well as the t-count value and partial r^2 value. The biggest influence comes from the efficiency dimension (physical evidence). With a large effect of 30.7% because it has the largest regression coefficient value among the other four variables.

The results of this quantitative study describe the dimensions of efficiency, accessibility, information availability, supply chain design, and uncertainty as variables that appear specifically for the essence of online business implementation. These variables will be evaluated and compared with the available literature to establish their relationship. Next, it will thoroughly explore each variable through the results of qualitative research.

3.1.1 Efficiency

The results of interviews with informants related to the efficiency of e-commerce centres, there are two factors: an increase in the rate of change and efficiency in decision making. Informants refer to the benefits of the internet when discussing how efficient it is for businesses with e-commerce. The average informant describes that six month of business activities through e-commerce is comparable to one year with an offline cycle. Regardless of the business, all informants agree that e-commerce shows rapid development. E-commerce thrives with incredible efficiency, but the rest of the conventional business is slow. Because e-commerce is a modern and rapidly growing business sector, business actors are vying for market share with cheaper offers than businesses still operating in a traditional nature. The informants also underlined the need for efficient decision-making to remain at the forefront of business competition in e-commerce. In this online business, traditional loses because online businesses provide information that attracts customers. The informants believe that their business has grown practically four times faster to achieve success.

According to Stalk (1988), in his study of these efficiency indicators, the change in business strategy towards time-based competitive advantage began in the late 1970s with the idea of flexible manufacturing. Business actors can save costs, improve the quality of goods, and attract consumers by running business processes efficiently. One of the interesting variables of e-commerce is the efficiency with which businesses run their business online. The current e-commerce environment emphasizes strategic efficiencies, thus enabling greater product cycle time utilization, rapid new item launches, and increased consumer transaction efficiency (Gregory et al., 2019).

3.1.2 Accessibility

Almost all informants discussed the impact of Internet access on business actors and their consumers. Business activities increasingly rely on system-to-system relationships between businesses and consumers. Informants see e-commerce as a solution to technical barriers and unite businesses in supply chain management. The internet allows businesses to interact and exchange information throughout the supply chain. The informant said that supply chain management now has web-hosting technology that allows businesses to exchange information on one platform using shared data and provide diverse perspectives for all consumers in the supply chain. This accessibility helps business actors manage information together; according to the informant, the internet can make it easier and more efficient for system-to-system integration.

The second aspect is market accessibility, which defines business actors' capacity to reach consumers who were not accessible before e-commerce. According to one informant, accessibility allows them to learn what consumers want. Some business actors explain getting consumers through accessibility; an e-commerce presence is needed to make a business model effective. Another business actor discussed the importance of the internet in providing a cost-effective means of reaching distant consumers.

The literature on e-commerce supports two components of accessibility and market access. Accessibility allows for an efficient level of engagement than in a typical business environment. According to Martinsons (2008), understanding the idea

of accessibility is very important for the efficient utilization of online business. The online flow of information is multidirectional, unlike offline business communication, which is one-way. Communication via online has been defined as multidirectional (Capriotti & Kuklinski, 2012; Karim et al., 2021; Nogueira & T  n  ez-L  pez, 2019). The e-commerce ecosystem allows businesses to develop consumer interactions and expands business access to increase their consumer base. Business actors are no longer limited to markets based on their geographic location. When global access is growing, it will give birth to new markets, and the accessibility of e-commerce allows the market storefront to be developed in any area with online access.

3.1.3 Information availability

Informants discussed responsiveness variables related to supply chain demand through online information and time availability. Due to the availability of data, the supply chain can achieve a high-efficiency level; as mentioned by an informant, e-commerce technology offers the availability of information throughout the supply chain. There is great value to one being able to implement innovation efficiently by connecting business partners and enabling one to observe the entire supply chain in a way that has never been done before. One of the informants mentioned that consumers could access and verify whatever they want and have access to information to ask about the progress of their transactions. Another study also highlighted the importance of supply chain information availability in e-commerce. Technological developments make the availability of information possible, making business management more efficient; availability throughout the supply chain improves supply chain management. Business actors can plan, implement, and evaluate results more precisely and efficiently when they have access to information (McAfee et al., 2012). Entrepreneurs have used this kind of information to gain a competitive advantage for their business and their supply chain (Li et al., 2006). However, the availability of information can contribute to information overload when businesses have more data than they normally handle, leading to increased complexity and ambiguity in their environment.

3.1.4 Supply chain design

Speed of operation is needed in e-commerce and new market access that has transformed supply chain management for conventional markets. Informants noted the challenges experienced concerning supply chain management in designing a constantly changing market as business actors continue to adapt to rapid changes. When a business actor enters a new market, he collaborates with existing competitors and competes with other business actors to get consumers. Businesses must learn to handle disputes when new competition enters the business by taking advantage of new possibilities for communication with consumers. According to the study, variations in e-commerce have resulted in changes in supply chain management across sectors. Due to the emergence of e-commerce, businesses can now advertise directly to consumers, reducing the need for intermediaries for conventional markets. In addition, e-commerce expands the number of connections available to consumers, the possibility for conflict to occur (Tsay & Agrawal, 2004). Functions and relative power change among suppliers, producers, retailers, and consumers in this new context, blurring the boundaries between business actors in conventional market structures (Ilyas et al., 2022; H Tamsah & Yusriadi, 2022).

3.1.5 Unpredictability

Another study related to e-commerce explains that business has developed, and the business structure has changed in several ways. Market vitality and a wider availability of information are made possible through the efficiency and accessibility of e-commerce to create a stable market. Entrepreneurs sometimes make judgments without comprehensive knowledge, increasing the consequences of uncertainty. On the other hand, many informants saw ambiguity as a positive thing. Many people may work in different areas, but we know that as businesspeople, informants can see and feel that e-commerce is efficient. Another study analyzes uncertainty variables such as dynamism, technical intensity, and changes in the e-commerce context. Robert Mitchell et al. (2011) found evidence for their notion that a dynamic environment increases uncertainty for decision-makers. Refsgaard et al. (2007) developed a technology intensity that reveals significant uncertainty when dealing with outcome uncertainty. Gelderman et al. (2016) outline how technical improvements have increased business uncertainty.

3.2 The influence of e-commerce on partnership management

Figure 1 describes the environment provided by e-commerce technology in supply chain management that separates it from a conventional business based on the findings of this study.

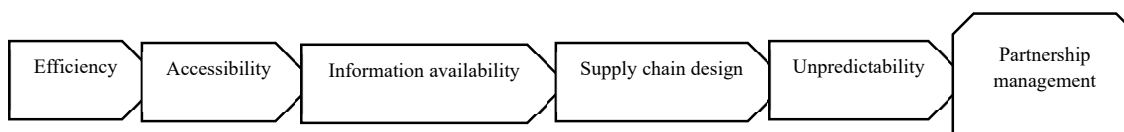


Fig. 1. depicts the effects of e-commerce on partnership management

Accessibility is how information is available, according to informants, online facilitating communication, information exchange, and supply chain design. E-commerce efficiency affects market accessibility by encouraging businesses to avoid

intermediary processes in the supply chain so that business activities are more effective and market information is available. Through its access to new consumers, e-commerce also helps information availability, efficiency, and accessibility characteristics, as shown in Figure 1, contribute to the dynamic availability of information and supply chain design, leading to uncertainty. The availability of dynamic markets, information networks, and supply directly contribute to the impression of uncertainty.

Differences in e-commerce affect the management of supply chain relationships for online business activities. Since supply chain management maintains the relationship between entrepreneurs in the supply chain, this study claims that e-commerce affects supply chain management through partnership management. Partnership management is a key subject that emerged from the interviews with the informants. Businesses recognize the value of partnership management as they engage electronically with more suppliers and consumers with varying supply chain configurations. Despite being able to complete many online transactions, some businesses still insist on maintaining face-to-face contact with their customers.

Businesses operating in the e-commerce market emphasize partnership management to fight uncertainty – by providing accessibility and obtaining resources – whether through partnerships or strategic alliances. According to one informant, the goal of business actors is to develop connections with consumers, such as cooperation, which is very difficult to replace; they already know the business they run, and business actors know consumers. There are a lot of trusts formed. To respect efficiency in this unpredictable climate, e-commerce businesses rely on partnerships to complement internal resources. Many partners with IT suppliers to build technical infrastructure, while others collaborate to improve HR to supply human resources. One informant noted that their main problem was accessibility; they reach capacity efficiently when acquiring multiple customers, so building and collaborating is an important part of their business. Business actors also recognize the value of partners for online businesses; one informant explained that to join traditional and modern markets successfully, it is necessary to have a strong strategic relationship and a strong partner to do day-to-day business.

Overcoming information overload, businesses emphasize partnership management. A volatile product market requires different resources, skills, and methods than a more stable market (Brown & Blackmon, 2005). In the context of e-commerce, increasing uncertainty due to the accessibility of dynamic markets and increasing availability of information has prompted informants to emphasize partnership management to protect their resources, skills, and strategies. Many studies show a beneficial relationship between the structural and dynamic environment for building partnership relationships (Grover et al., 1996; Mamédio et al., 2019). According to Refsgaard et al. (2007), closer relationships between business actors provide greater coordination, stability, and flexibility. Increasing the availability of information can make managing large amounts of accessible information more difficult.

According to resource dependence theory, governance between business actors is a reaction to an unforeseen situation where the administration establishes and maintains continuous interactions among supply chain partners (Canever et al., 2008). In an unpredictable environment with a changing market, business actors internalize fewer resources and competencies than in a stable market (Hasmin Tamsah et al., 2020). As a result, business actors deliberately regulate their trade to reduce uncertainty. These two theories are interrelated (Canever et al., 2008). It is based on the idea that organizations are motivated to establish adequate governance arrangements in the face of uncertainty (Zacharias et al., 2021). The uncertainty usually encourages business actors to buy or lease assets from other businesses rather than producing their own (Haris et al., 2021). Resource dependence theory and transaction cost approaches emphasize managing collaboration between organizations because e-commerce is characterized by intense uncertainty.

4. Discussion

This study impacts organization that runs e-commerce businesses and those that do not. Business actors interested in e-commerce should prioritize partnership management to address environmental volatility, dynamic market accessibility, and overall availability of information. Partnerships with multiple suppliers enable businesses to receive the resources they need when they are accessible in an ever-changing environment. This may become increasingly important as the economy develops; continuity of the e-commerce business has improved since the beginning of 2020 due to the COVID-19 pandemic. This increases uncertainty for businesses and provides opportunities for them to improve their business strategies. In addition, business actors must assess how to manage interactions between organizations according to their business strategy. In the conventional workplace, successful management partnerships lead to competitive advantage. It helps organizations in managing supply chains through e-commerce, which has proven essential not only for success but also for survival. E-commerce infrastructure may have an impact on conventional businesses. Because suppliers and consumers rely on individuals they continue to deal with, relationships can create barriers to competition. Conventional businesses may need to manage their connections better to prevent the loss of suppliers or customers. Proactive relationship and supply chain management will enable businesses to embrace e-commerce and possibly create profits faster than ever. It will also simplify businesses to deal with volatility, market changes, and the availability of more important information in conventional contexts. Partnership management can help trading partners deal with the increasing availability of information that the atmosphere offers for e-commerce more effectively. Entrepreneurs often experience uncertainty when deciding which data is important and how to understand it. This study emphasizes the need to manage relationships to avoid friction by

collaborating towards a clear view of what information is valuable and how it is used. The competitive advantage of effective information flow management in e-commerce is very important for building supply chain partnerships. Information flows can overwhelm managers functioning in their environment if effective management is not in place. Collecting, organizing, and disseminating data can drain human and financial resources. When an organization is trained on how to manage information efficiently and effectively, it may be able to adapt to the rapidly changing information-driven world.

This study has corroborated previous studies in the literature by finding a relationship between perceived uncertainty and the value of partnership management. This study had an impact on theory as well. When faced with uncertainty, businesses have used transaction value effects and resource dependence theory to explain why they form relationships with other businesses in their supply chains. Through sustainable relationships, businesses deliberately build collaboration among businesses to reduce delays by lowering transaction costs and developing a flexible and reliable supply of assets. In this sense, e-commerce is a different environmental situation in which these theories support the uncertainty that leads to the formation and management of organizational partnerships. This research discovered an intriguing association in an e-commerce context. The researchers found that increased information availability corresponded with more uncertainty. Several studies in other circumstances highlight the importance of ongoing information searching to lower frequency (Amit & Zott, 2001; Gosain et al., 2004; Ijaz & Rhee, 2018). The abundance of information available in the context of e-commerce may be a good place to start exploring the boundaries of data as a source for reducing uncertainty.

5. Future research directions

This study shows how to obtain a conceptual interpretation that produces theoretical linkages. The strength of the research also causes research limitations, including quantitative methods that only test variables without developing them and qualitatively through informant interviews. This study is deductive and inductive, intended to test variables and focus on generating theories through a scientific process and therefore limited to theory development. This has not provided validation for the theoretical relationship that has been built, so it is still necessary to carry out many empirical studies that apply theory testing research strategies. The strength of in-depth interviews as a research instrument is related to the informants' dependence on professional interviewers. Human interviewers are sophisticated information processors with capacities that far surpass other instruments in many respects. Can help direct informant interviews to be important and meaningful themes and elaborations. However, since there is always the possibility that the interviewer will exert undue influence on the informant, it is very important to verify the findings and ensure that they are not the product of the procedure. In addition, the application of interview studies has several obstacles, such as the interviewer can affect the type and quality of the informant's answers.

This research is also limited in its impact because of the method used to gather informants. Purposive sampling was used in this research; hence the results cannot be extrapolated to a vast population. There is no guarantee that everyone working in e-commerce, or even inside a single organization, will be randomly picked to participate in a research study. Participant selection was based only on their ability to identify emergent research ideas. The participants were a group of business development and operational managers from five different companies.

The conclusion of this study explains the impression of the e-commerce environment and its effect on supply chain management, which is appropriate for the same e-commerce business actor. In addition, the findings of this study can be applied to research informants, provided that the interpretations of some informants partially capture the previous experiences of several people. Examination of informants is used to determine how this generalization can be applied. Still, because of how informants are taken and the number of informants, it isn't easy to generalize the results of this study.

This study paves the way for future research to build on these results. To better understand this issue, aspects of e-commerce and its effects should be investigated in more detail as a first step by extending informants to a more significant number of organizations. In e-commerce, for example, make the impact of supply chain management varies with time? This research looks at the perspective of certain business actors. From a broader supply chain perspective, it will be interesting to explore the consequences of e-commerce on supply chain management partnerships. Are the experiences of other supply chain participants comparable or different? Are business size, supply chain position, or other business characteristics important? The current study focuses on the relationship between e-commerce and management partnerships. Future studies should investigate the implications of the e-commerce component of supply chain management, which includes inter-organizational relationships. Is there an impact on all or only certain supply chain management tasks, and if so, why? Is there an impact on supply chain performance? Measuring outcomes across the supply chain may be challenging in the context of the typical business actor. Whether efficiency or accessibility makes the assessment simpler or more taxing should be investigated. Given how the e-commerce market has changed, a follow-up with new entrepreneurs can provide more information.

A research design includes informants from more significant business actors and other supply chain informants who participate in e-commerce. After the conceptualization is complete, testing the hypotheses established during this research is necessary. It should establish a construction procedure in an e-commerce setting and use a quantitative development approach to evaluate theoretical correlations. As a result, the results may be more precise than those obtained through supply chain

management in a traditional context, allowing refinement of theory and better recognition between conventional and e-commerce settings. In addition, contemporary research focuses on e-commerce and partnership management. With the advent of e-commerce comes the perception that the business environment is more volatile than ever. Previous studies have shown that businesses respond through generating and maintaining connections with their supply chain members. This connection helps reduce risk in the decision-making and implementation of business actors. Managing the interactions between supply chain consumers is the essence of supply chain management. According to research findings, to deal with the uncertainty generated by e-commerce, the business actors participating in it mainly rely on managing strong relationships with supply chain consumers.

Author's contribution

Conceptualization and methodology [Yusriadi Yusriadi, M Awaluddin A, Firman H, Andi Asrijal]; data analysis [Yusriadi Yusriadi, M. Awaluddin A]. The first draft of the manuscript was written by [Yusriadi Yusriadi] and all authors contributed to the manuscript and commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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Conflicts of interest

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