Uncertain Supply Chain Management 9 (2021) 823–830

Contents lists available at GrowingScience

Uncertain Supply Chain Management

homepage: www.GrowingScience.com/uscm

The effect of supply chain management on multi-channel retailing and business performance

Setiawan[a], Donny Arif[a*], Siti Mahmudah[a], Heni Agustina[b] and Varid Martah[a]

[a]*Universitas Maarif Hasyim Latif, Indonesia*
[b]*Universitas Nahdlatul Ulama Surabaya, Indonesia*

C H R O N I C L E

Article history:
Received March 12, 2021
Received in revised format May 8, 2021
Accepted August 12 2021
Available online
August 12 2021

Keywords:
Supply chain management
Multi-channel retailing
Business performance

A B S T R A C T

Pandemic covid has changed the business view to be more dynamic to business performance. The policy of restricting activity also undermines business difficulties that occur, so it is necessary to find how businesses can survive wholesale. This research was conducted to determine the effect of supply chain management (SCM) on multi-channel retailing and business performance in the era of pandemic covid-19 and restrictions on community mobility. Using analysis of this research path is divided into two criteria of direct and indirect influence. This study was conducted on several wholesale shops in Indonesia with 99 respondents. The main finding of this study is that SCM can affect business performance through multi-channel retailing with three main indicators: inventory investment, inventory efficiency, and forecasting accuracy. The added value gained from this research is from the test results obtained that a good inventory management scheme and forecasting and support from many supplies and sales channels will drive business performance for the better.

1. Introduction

The outbreak of covid-19 disease has led many countries to change policies and rules about the industry. The change occurred because covid-19 has made human activities very limited, and it greatly affects industry and trade activities. Surely, if government policies are made to control the outbreak, every company must adapt and adjust it. In this study, researchers made a scientific study on the impact of government policies on business performance measured through supply chain management (SCM)and multi-channel retailing (MCR) on business performance. SCM has a very important role in business performance by combining customer social responsibility (CSR) (Modak et al., 2020). Another example from (Chopra 2018) is that the smart and structured SCM is the one that presents offline and online channels; this will make the supply chain economical and responsive to customers. In time, the future of supply chain management is determined by the availability and diversification of raw materials and the ability to improve technology to predict shortages (Okeagu et al., 2020). Changes in patterns made in the supply system can defend companies from the economic impact caused by restricting human movement due to covid-19. The supply chain should be worked on more efficiently in performance, quality and cost (Kopyto et al., 2020). A more efficient SCM system is expected to improve the business performance of the wholesale market in Indonesia. The theory from internet connection capabilities and mapping applications from application services such as Google, it is expected that SCM by relying on CSR can be realized (Chopra, 2018). This realization can happen if, in the research results, it is known that SCM can fully support multi-channel retailing in supporting business performance. Multi-channel retailing uses different ways to be able to sell its products to customers, through offline and online systems (Méndez-Suárez & Monfort, 2020) Multi-channel retailing uses several integrated distribution channels to see how consumers shop, but retailers are expected not to study product distribution channels, but also through communication channels and internet media used (Ailawadi &Farris, 2017). In a multi-channel retailing environment, consumers decide to choose a different channel or combine both (Offline and Online) because they want a touch and a taste (Secundo et al., 2020). From literacy, sources stated that multi-channel retailing is increasingly advanced with the title omnichannel, which means that the customer management system is integrated in such a way so that customers get to experience throughout the channel and performance above the

* Corresponding author
E-mail address: doni_arif@dosen.umaha.ac.id (D. Arif)

doi: 10.5267/j.uscm.2021.8.007

channel to be optimal (Verhoef et al., 2007). Based on the differences that occur, it is identified that the quality of multi-channel retailing is holistically difficult to apply because there are some products that consumers want to feel directly before buying (Acquila-Natale &Iglesias-Pradas, 2020). In addition, multi-channel retailing is also considered a design change, diversification and synchronization, and evaluation of different channels when companies seek to interact with their customers. The goal is simply to increase the company's value (Thaichon et al., 2020). In general, changes in the supply chain management system with the support of a multi-channel retailing system will improve business performance in a structured and systematic manner. Still, the current conditions in the field are very different. The social restrictions in the city due to the transmission of the covid-19 virus resulted in distribution channels also getting obstacles. Therefore, this study emphasizes how SCM and multi-channel retailing can answer the obstacles that occur during the policy of restricting the social activities of Indonesian people. The existing wholesale sector is a mixture of foodstuffs, so it is likely to be closed because government policy does not exist. Customers will still be able to purchase necessities easily at the wholesale centre. This research also proposes integrated supply chains used when customers are willing to accept sustainable offers so that business performance can be achieved (Priem &Swink, 2012). The model was created to increase customer demand in collaboration with the advantages of the supply side (Ni & Sun, 2019). This research of SCM variables divides them into three measured indications: inventory investment, inventory efficiency and accuracy of future forecasting. While multi-channel retailing is measured using communication channels by looking at the development of current technologies such as stores with automatic payment and service, digital channels used, cellular networks, and mobile sales force. This indicator is expected to assess business performance in terms of sales, profitability and popularity of existing products in the market, and the number of customers in the future in the face of competition and government policy risks due to the impact of pandemic covid-19.

Based on some background summary and supporting theory, the problem formulation in this study was done for static measurement.

Problem Formulation.

1. Is there any influence of SCM on Multi-Channel Retailing wholesale in Indonesia?
2. Does Multi-Channel Retailing affect the performance of a wholesale business in Indonesia?
3. Does SCM affect the performance of a wholesale business in Indonesia?

2. Literature review

2.1 Supply chain management dan multi-channel retailing

The supply chain has a very central role in delivering value to customers. Therefore, the right choice of customers can also be seen from how big the part of the supply chain system is distributing to customers. In a multi-channel strategy, companies with two or more retail channels will face new challenges and opportunities to convey information about products (D. Bell et al., 2014). An example from Bell et al. (2017) empirically explains the impact of offline exhibitions on showroom openings by WarbyParker.com explains that offline displays can increase demand significantly and increase online channels. Multiple channel retailing is used to provide products or services to consumers in various media (offline, online, etc.). Still, it does not optimise management cooperation in different channels available (Verhoef et al., 2015). With the influence of supply chain management with its indicators, it is expected to support the synergy of multi-channel retailing with the available media. With the synergy that occurs, service providers can provide extensive information about the brand to customers (Cai & Lo, 2020)

2.2 Supply Chain Management and Business Performance

Supply chain management can be defined as an effort to include the triple bottom line in sustainable development, namely: economic, environmental, and social goals into supply chain management provides explicit examples of the idea of supply chain management as a flow of materials, information, and capital as well as cooperation between companies within the scope of the supply chain with the same purpose of three dimensions of sustainable development that consider the needs of customers—furthermore identified two characteristics as the basis of SCM, namely the creation of a coordinated supply chain through economic, environmental and social considerations through inter-organizational business systems (Roy et al., 2018; Seuring & Müller, 2008). Golicic and Smith (2013) found that SCM is negatively related to business performance at certain times. Supply chain can be sustainable if it can achieve more realistic business performance collection (Liu et al., 2013). Another example of research (Zhou & Li, 2020) is that information provided through the supply chain can improve quality management and positively impact business performance. From the series of theories presented, several things need to be reviewed that in certain supply chain work systems will significantly impact business performance (Nugroho et al., 2020). Still, the site and other conditions will not have an impact on improving business performance (Nugroho et al., 2021).

The literature that has been stated above can be described through the conceptual framework of the form of research that will be conducted today by telling supply chain management with multi-channel retailing channels to business performance.

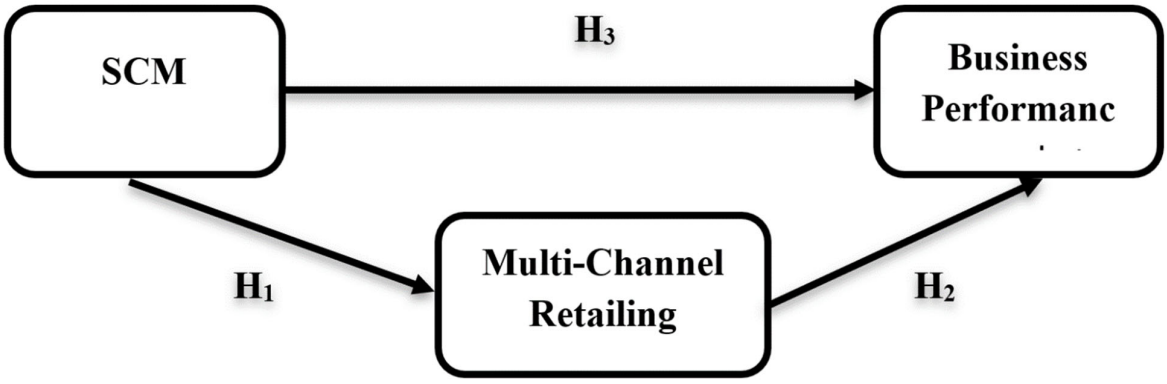

Fig. 1. SCM Concept Framework, MCR and Business Performance

2.3 Hypothesis

Based on the conceptual framework can be formulated quick answers to the influence of variables in research.

H1: *Review of supply chain management affects multi-channel retailing.*
H2: *Multi-channel retailing study affects business performance.*
H3: *Review of supply chain management affects business performance.*

3. Research Methods

This research design uses a type of explanatory research with the aim to explore the influence of supply chain management on multi-channel retailing and business performance conducted in Indonesian wholesale shops. In the literature explained (Goldman et al., 2019), explanatory research seeks to provide a causal explanation of a phenomenon based on data available in statistics. This study is used to identify causal relationships of variables in research problems. In addition to explanatory research, the study also used a causal approach to determine the influence of each variable.

Sampling is done with a type of probability sampling with a simple random sample and done randomly to wholesale shop employees at the managerial level and PIC Supplier, with the same opportunities to take data. Positions assigned as respondents include director, manager, first-line manager, coordinator, senior staff, and PIC. The respondents involved numbered9 9 taken from several stores.

Table 1
Number of Respondents' samples

No	Wholesale Shop	Respond
1	Lottemart	45
2	Superindo	36
3	Hypermart	25
Total		99

This study uses a partial least square (PLS) data analysis technique with an evaluation model based on prediction measurement with non-parametric properties (Hair et al., 2020)

1. I was using an outer measurement model with reflective indicators evaluated using convergent and discriminant validity.
   The reflection indicator block is written with the equation formula below:

   $$X = \lambda x\xi + \varepsilon x$$

   $Y = \lambda y\eta + \varepsilon$and

   X and y are indicators of exogenous latent (and endogenous) variables $(\xi)\eta)$ whereas $\lambda$are pairs of loading matrices that describe the simple regression of relationships between variables and are εinterpretations of errors at the time of measurement.
2. The second outer model uses formative indicators measured by substantive content by comparing relative weight and weight size.
   The case value of each latent variable with estimates in pls as follows:

   $$\xi b = \Sigma kb^{w} kb^{x} kb$$

$$\eta i = \Sigma ki^{w} ki^{y} ki$$

Σkb^{w} and Σki^{w} Is the weight used as a measure of the linear latent variable estimation of the weight value indicator?

3. Structural model or inner model is an evaluation done by looking at the percentage of variance represented by looking at the value of R^2
   Equation model:
   $$\eta = \beta o + \beta \eta + \tau \xi + \varsigma$$
   The value η describes the exogenous variant (response) to latent variables and is the residual variable vector. $\xi\varsigma$ This model is also used to measure the validity and reliability of construct correlations by comparing square root values of extracted variance averages (AVE)
   AVE = $\frac{\Sigma \lambda i^2}{\Sigma \lambda i^2 + \Sigma i \, var \, (\varepsilon i)}$
   (Biancolillo & Næs, 2019)This measurement is used to measure the reliability of latent variable component scores and has more conservative results. The recommended AVE value is more than 0.50.
4. Estimation stability is evaluated through testing of statistic t values by bootstrapping.

4. Result

Testing is done by analysis methods that are not based on assumptions and should not be distributed normally—performed with nominal scale, ordinal, interval and ratio. In the first stage, outer model testing was conducted to obtain the value of convergent validity. The default value used is more than 0.5.

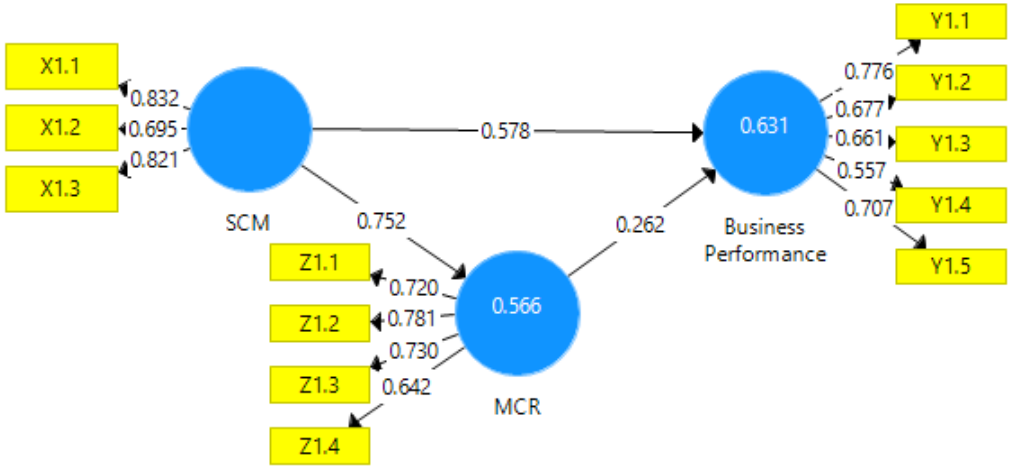

Fig. 2. The results of outer model from SmartPLS

The results of the outer model showed all indicators of latent variables showed significant validity values so that that research could continue.

Table 2
Construct Reliability and Validity

Invariable	Composite Reliability	rho_A
SCM	0.827	0.712
MCR	0.811	0.707
Business Performance	0.809	0.718

The reliability test results, and the validity of the construct have shown a composite reliability value of > 0.7, indicating that all indicators in this study were considered to measure latent variables consistently. Further testing is done by conducting inner model and structural tests to determine the existence/absence of variable influence. This test used T-Statistic with a significant rate of less than 0.05.

Table 3
The summary of the results

	Original Sample	T-Statistic	T-Table	P-Values
SCM ➔ MCR	0.752	14.564	1.9842	0.000
MCR ➔ Business Performance	0.262	2.807	1.9842	0.005
SCM ➔ Business Performance	0.578	6.602	1.9842	0.000

Hypothesis:

H_0: X does not affect Y
H_1: X has a significant effect on Y

By criteria:

If the P-Value < 0.05; then H_0 is rejected and H_1 is accepted
If the P-Value > 0.05; then H_1 is rejected and H_0 is accepted

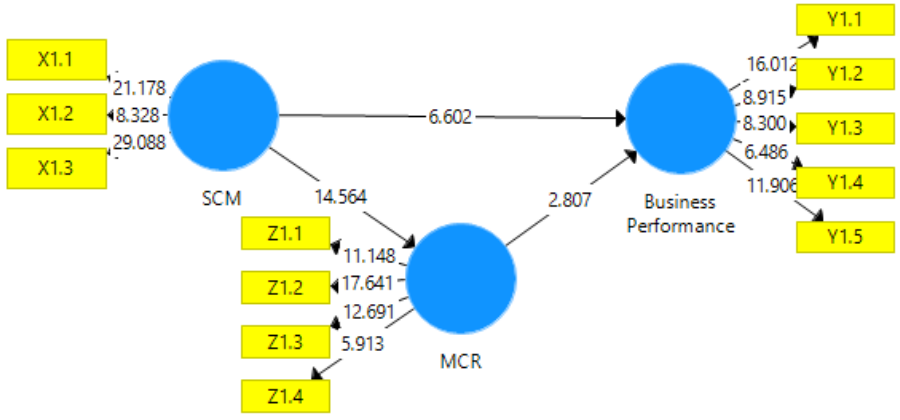

Fig. 3. Inner Model

From Table 3 and Fig. 3, it can be explained that;

1. Supply chain management has a significant impact on multiple-channel retailing in wholesale shops in Indonesia, with a coefficient value of 0.752 and a positive value. With positive results, it can be concluded that the needs of consumer choice through multiple-channel retailing in the era of pandemic covid 19 can be fulfilled properly. This result is also supported by null T-statistic more > than T-table with significance below 0.05.
2. Multiple-channel retailing has a positive impact on business performance, with a coefficient value of 0.262. This positive value gives an idea that the higher the value of multiple-channel retailing will drive business performance to be better. This result is also supported by T-statistic more > than T-table with significance below 0.05.
3. Supply chain management has a significant impact on business performance in wholesale shops in Indonesia, with a coefficient value of 0.578 and a positive value. With positive results, the higher the value of SCM, the child improves the performance of wholesale shop business in Indonesia. This result is also supported by null T-statistic more > than T-table with significance below 0.05.

Table 4
The summary of the results

	Original Sample	T-Statistic	P-Values
SCM ➔ MCR ➔ Business Performance	0.197	2.649	0.008

Table 4 coefficients estimate indirect influence and shows that supply chain management through multi-channel retailing has a positive value of 0.197 which means that there is supply chain management to business performance through multi-channel retailing T-statistic above T-table p-value < 0.05.

Table 5
Determinant Coefficient

	R Square	R Square Adjusted
Business Performance	0.631	0.624
Multiple-Channel Retailing	0.566	0.561

The table of determinant coefficients shows that the magnitude of supply chain management (SCM) influence on business performance is 0.631 or 63.1%. At the same time, supply chain management affects multiple-channel retailing by 0.561 or 56.1%.

5. Discussion

The pandemic covid-19 has changed the business view to be more dynamic and volatile; this research also provides an assessment amid restrictions on activities by the government that will negatively impact businesses. Changes in the way of supply chain management will help the company stay on a good performance. Please note that this study shows SCM indicators to face challenges that look as difficult as they are today. Researchers try to raise the issue from another point of view within SCM, divided into three indicators: inventory investment, inventory efficiency, and forecasting. These three indicators obtained very significant results with the growing wholesale shop business in Indonesia. Many large stores are closed because they cannot apply SCM well, but retail companies with the application of SCM using these three indicators proved to be able to survive to meet the community's daily needs. Business performance is also supported by MCR, which uses many channels of bidding and sales to customers. The convenience offered amid social restrictions, and human movement is very helpful for customers in obtaining their goods. From this research also got that the mechanism of supply chain management with the support of inventory investment indicators, inventory efficiency, and accuracy of forecasting and supported by MCR indicators of many choices of outlet channels, digital channels, cellular channels and mobile sales force proved to improve business performance very significantly.

6. Conclusion

1. The test results have shown that SCM significantly affected MCR when the level of significance is 0.05. It is also in line with what has been done by Zikopoulos and Tagaras (2015), which shows that SCM can deliver positive results by using three indicators of inventory investment, inventory efficiency and forecasting accuracy. It is also supported with a T-statistic larger than the T-table.
2. The second result have shown MCR had a positive and significant effect on business performance with a P-Value value below 0.05. MCR gives customers the option to choose how to buy products and the ease of making payment transactions either directly or digitally. This has answered the allegations that occurred whether, in the era of the pandemic system, channels like this will go well or not. And in this research, it was proven that the media offered to customers proved effective.
3. Indirectly SCM with three indicators is also very influential on business performance facilitated by MCR as a supporting variable or moderator. This result is evidenced by the P-value of 0.000, indicating that SCM influences business performance positively and significantly.

References

Acquila-Natale, E., & Iglesias-Pradas, S. (2020). How to measure quality in multi-channel retailing and not die trying. *Journal of Business Research*, *109*, 38–48. https://doi.org/https://doi.org/10.1016/j.jbusres.2019.10.041

Ailawadi, K. L., & Farris, P. W. (2017). Managing Multi- and Omni-Channel Distribution: Metrics and Research Directions. *Journal of Retailing*, *93*(1), 120–135. https://doi.org/https://doi.org/10.1016/j.jretai.2016.12.003

Bell, D., Gallino, S., & Moreno, A. (2014). How to Win in an Omnichannel World. *MIT Sloan Management Review*, *56*, 45-+.

Bell, D. R., Gallino, S., & Moreno, A. (2017). Offline Showrooms in Omnichannel Retail: Demand and Operational Benefits. *Management Science*, *64*(4), 1629–1651. https://doi.org/10.1287/mnsc.2016.2684

Biancolillo, A., & Næs, T. (2019). Chapter 6 - The Sequential and Orthogonalized PLS Regression for Multiblock Regression: Theory, Examples, and Extensions. In M. B. T.-D. H. in S. and T. Cocchi (Ed.), *Data Fusion Methodology and Applications* (Vol. 31, pp. 157–177). Elsevier. https://doi.org/https://doi.org/10.1016/B978-0-444-63984-4.00006-5

Cai, Y.-J., & Lo, C. K. Y. (2020). Omni-channel management in the new retailing era: A systematic review and future research agenda. *International Journal of Production Economics*, *229*, 107729. https://doi.org/https://doi.org/10.1016/j.ijpe.2020.107729

Chopra, S. (2018). The Evolution of Omni-Channel Retailing and its Impact on Supply Chains. *Transportation Research Procedia*, *30*, 4–13. https://doi.org/https://doi.org/10.1016/j.trpro.2018.09.002

Golicic, S. L., & Smith, C. D. (2013). A Meta-Analysis of Environmentally Sustainable Supply Chain Management Practices and Firm Performance. *Journal of Supply Chain Management*, *49*(2), 78–95. https://doi.org/https://doi.org/10.1111/jscm.12006

Hair, J. F., Astrachan, C. B., Moisescu, O. I., Radomir, L., Sarstedt, M., Vaithilingam, S., & Ringle, C. M. (2020). Executing and interpreting applications of PLS-SEM: Updates for family business researchers. *Journal of Family Business Strategy*, 100392. https://doi.org/https://doi.org/10.1016/j.jfbs.2020.100392

Kopyto, M., Lechler, S., von der Gracht, H. A., & Hartmann, E. (2020). Potentials of blockchain technology in supply chain management: Long-term judgments of an international expert panel. *Technological Forecasting and Social Change*, *161*, 120330. https://doi.org/https://doi.org/10.1016/j.techfore.2020.120330

Liu, H., Ke, W., Kee Wei, K., & Hua, Z. (2013). Effects of supply chain integration and market orientation on firm performance. *International Journal of Operations & Production Management*, *33*(3), 322–346. https://doi.org/10.1108/01443571311300809

Méndez-Suárez, M., & Monfort, A. (2020). The amplifying effect of branded queries on advertising in multi-channel retailing. *Journal of Business Research*, *112*, 254–260. https://doi.org/https://doi.org/10.1016/j.jbusres.2019.10.042

Modak, N. M., Sinha, S., Raj, A., Panda, S., Merigó, J. M., & Lopes de Sousa Jabbour, A. B. (2020). Corporate social responsibility and supply chain management: Framing and pushing forward the debate. *Journal of Cleaner Production*, *273*, 122981. https://doi.org/https://doi.org/10.1016/j.jclepro.2020.122981

Ni, W., & Sun, H. (2019). The effect of sustainable supply chain management on business performance: Implications for integrating the entire supply chain in the Chinese manufacturing sector. *Journal of Cleaner Production*, *232*, 1176–1186. https://doi.org/https://doi.org/10.1016/j.jclepro.2019.05.384

Nugroho, M., Arif, D., & Halik, A. (2021). The effect of loan-loss provision, non-performing loans and third-party fund on capital adequacy ratio. *Accounting*, *7*(10), 943–950. https://doi.org/10.5267/j.ac.2021.1.013

Nugroho, M., Halik, A., & Arif, D. (2020). *Effect of CAMELS Ratio on Indonesia Banking Share Prices*. *7*(11), 101–106. https://doi.org/10.13106/jafeb.2020.vol7.no11.101

Okeagu, C. N., Reed, D. S., Sun, L., Colontonio, M. M., Rezayev, A., Ghaffar, Y. A., Kaye, R. J., Liu, H., Cornett, E. M., Fox, C. J., Urman, R. D., & Kaye, A. D. (2020). Principles of supply chain management in the time of crisis. *Best Practice & Research Clinical Anaesthesiology*. https://doi.org/https://doi.org/10.1016/j.bpa.2020.11.007

Priem, R., & Swink, M. (2012). A Demand-Side Perspective on Supply Chain Management. *The Journal of Supply Chain Management*, *48*. https://doi.org/10.1111/j.1745-493X.2012.03264.x

Roy, V., Schoenherr, T., & Charan, P. (2018). The thematic landscape of literature in sustainable supply chain management (SSCM). *International Journal of Operations & Production Management*, *38*(4), 1091–1124. https://doi.org/10.1108/IJOPM-05-2017-0260

Secundo, G., Ndou, V., Del, P., & Pascale, G. De. (2020). Technological Forecasting & Social Change Sustainable development , intellectual capital and technology policies : A structured literature review and future research agenda. *Technological Forecasting & Social Change*, *153*(March 2019), 119917. https://doi.org/10.1016/j.techfore.2020.119917

Seuring, S., & Müller, M. (2008). From a literature review to a conceptual framework for sustainable supply chain management. *Journal of Cleaner Production*, *16*(15), 1699–1710. https://doi.org/https://doi.org/10.1016/j.jclepro.2008.04.020

Thaichon, P., Phau, I., & Weaven, S. (2020). Moving from multi-channel to Omni-channel retailing: Special issue introduction. *Journal of Retailing and Consumer Services*, 102311. https://doi.org/https://doi.org/10.1016/j.jretconser.2020.102311

Verhoef, P. C., Kannan, P. K., & Inman, J. J. (2015). From Multi-Channel Retailing to Omni-Channel Retailing: Introduction to the Special Issue on Multi-Channel Retailing. *Journal of Retailing*, *91*(2), 174–181. https://doi.org/https://doi.org/10.1016/j.jretai.2015.02.005

Verhoef, P. C., Neslin, S. A., & Vroomen, B. (2007). Multichannel customer management: Understanding the research-shopper phenomenon. *International Journal of Research in Marketing*, *24*(2), 129–148. https://doi.org/https://doi.org/10.1016/j.ijresmar.2006.11.002

Zhou, H., & Li, L. (2020). The impact of supply chain practices and quality management on firm performance: Evidence from China's small and medium manufacturing enterprises. *International Journal of Production Economics*, *230*, 107816. https://doi.org/https://doi.org/10.1016/j.ijpe.2020.107816

Zikopoulos, C., & Tagaras, G. (2015). Reverse supply chains: Effects of collection network and returns classification on profitability. *European Journal of Operational Research*, *246*(2), 435–449. https://doi.org/https://doi.org/10.1016/j.ejor.2015.04.051