How Dynamic Capability in the Port Industry? Systematic Literature Review

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Abstract

This study aims to know the clear concept of theory and the proper implementation of dynamic capability in the port industry. This study uses the Systematic Literature Review (S.L.R.) method. There were two steps in using the S.L.R. method: setting inclusion criteria and locating and selecting the potential studies. The strategy used in this study was by carrying out a computerized search using multiple keywords in six databases. The researcher found 8,186 papers in Google Scholar, Emerald, ScienceDirect, Wiley, Sage, and Taylor & Francis using the keywords. Then the papers were sorted in 3 times until left a total of 10 studies to be used for this study. The findings of this study have two implications for management practices. First, the port manager should be responsive, seeing opportunities and following environmental conditions in any situation. Second, the port should improve and renew the existing resource that uses dynamic capability as support tools.

Keywords
Dynamic capability, Port industry, Systematic literature review.

1. Introduction
The change in the company environment often happens now (McCormick et al., 2016). Therefore, any strategies were used by companies so that their business activities could still go well in any condition (Endres, 2018). The other reason was still balancing and not lagging from competitors (Pantouvakis & Bouranta, 2017).

The existence of competitive advantage was one reason for the company to survive in environmental conditions that keep changing and technological development getting faster (Kaur, 2019). However, to reach a competitive advantage, the dynamic capability was needed. Therefore, the company should maximize its resources into something with value (Chukwuemeka & Onuoha, 2018; Cousins, 2018).

The view of dynamic capability has put in a lot of effort to explain how and why the organization could adapt to changes in the business environment (Wilden et al., 2016). The dynamic capability allows the company to effectively tackle the threats generated by dynamism in the business environment, but it will make the existing organization's capability unable to be used (Kaur & Mehta, 2016).

The critical implication of this approach is the company could simultaneously create the capability to exploit the new resource and revive the existing resources and capabilities. Therefore, the dynamic capability is considered an important thing and is the heart of the company's competitiveness (Kaur & Mehta, 2016).

However, in this era, the company's capability for maintaining competitive advantage is getting down from time to time, so it becomes the main concern by academics and practitioners (Breznik & Lahovnik, 2016). Over-competition could be lowering the company's capability to reach out to the sustainability of competitive advantage (Lindskov et al., 2020). So continuous development of existing resources, knowledge, and competencies with adequate market developments is essential for strategic renewal. It can be utilized as an opportunity to overcome threats arising from changes in a competitive environment (Endres, 2018).

Also, many dynamic capability views were criticized because of the lack of empirical support. Literature review related to this study shows minimal progress, so not much could be found in this field because of the relationship that disconnected with research agency (Breznik & Lahovnik, 2016).
And many have assumed previously that these views were not clear conceptually and tautologically. The reason was the lack of coherent definition, indefinite boundaries, and various theories (Amui et al., 2016; Wilden et al., 2016). The other reason mentioned is that the concept was hard to operationalize and measure (Parida et al., 2016).

This study focuses on the port sector because various technological and regulatory changes have created a business condition that was unstable and contested in the port sector. Competition in this sector has a concept that is related in many aspects and has complexity. The obedient port on national competition policy simultaneously also has to compete with the neighboring ports because of the geographical hinterland's impact on getting a market nomination. So to compete effectively in logistics and the global supply chain, the port should adopt the strategy and the effective operation (Cheon et al., 2018). Therefore, developing the right strategy in port logistics could strengthen port positions in the competitive market (Okorie et al., 2016).
Moreover, the lack of scientific research and literature related to this topic in the port sector makes another excuse for this study to focus on the port sector (Vaio & Varriale, 2018). This study aims to address the problems present in all kinds of ports, and the port also includes hinterland ports. Therefore, this study tried to solve the problems described before by addressing a research question: What is the relationship between dynamic capabilities in the port sector?

2. Literature Review

2.1 Dynamic Capability

Dynamic capability is an organization's capability that, on purpose, makes, expand, or changes the resource base (Helfat et al., 2007). Other researchers define dynamic capability as an organization's capability to achieve a new shape from competitive advantage by renewing the organization resource's competence to attain a dynamic business environment. Other researchers define dynamic capability as an organization's ability to achieve a new shape from competitive advantage by renewing the organization's resources to attain suitability with the dynamic business environment (Wheeler, 2002).

Based on the definitions from previous research, the researcher concludes that dynamic capability is a capability owned by organizations to adjust themselves in an environment that's constantly changing by changing and updating the resources.

Previous research has perfected four dimensions in dynamic capability (Schreyögg & Kliesch-Eberl, 2007; Teece, 2007), which are as follows: (a) Sensing is the capability to identify and search the opportunity and threats, (b) Seizing is the capability for using and resolving the perceived new opportunities, (c) Learning is the capability for responding to anything from the environment in a new way, (d) Monitoring is the capability for evaluating, controlling, and observing the other dynamic capability.

2.2 Dynamic Capability in the Port Sector

Port is the central connecting point driving dynamics in big logistic fields. At the same time, seaports depend on hinterland ports to maintain their attraction (Notteboom & Rodrigue, 2005).

The strategic part on port authority should be better than the traditional facilitator scope. The existence of port authority could play an essential role in creating the primary competence and the economic range with involves the development of land transport distribution and an active information system. And the network that becomes a connector with market participants was also essential in achieving a competitive advantage and facing limitations in the port sector, both in terms of investments and managerial capability (Notteboom & Rodrigue, 2005).

Therefore, to resolve and respond to the competitive environment, the port should focus on reconfiguring its resources and capability. They should also react quickly to opportunities and follow the environmental change to create and maintain the competitive advantage (Teece, 2012).

Previous researchers have proven a significant relationship between dynamic capability and competitive advantage (Ambrosini & Bowman, 2009; Hou & Chien, 2010; Olufemi A. et al., 2014; Wu, 2010). The previous researcher used the Resource-Based View (R.B.V.) as a classic view of the dynamic capability view and stated that the resource-based

view on port activities could be helpful and provide original insight into the port's core competencies. It can also be beneficial for developing an effective port cluster strategy. In addition, the focus on sources of competitive advantage is equally essential in implementing competitive advantage for the formation of a proactive port strategy (E. Haezendonck et al., 2001; Elvira Haezendonck & Langenus, 2019)

3. Methodology

3.1 Data Analysis Method

The method in this study was Systematic Literature Review (S.L.R.). This study uses the method because if it's compared with traditional literature review, S.L.R. has more advantages. Conventional literature reviews don't usually evaluate articles' quality and unfollow specific rules (Kraus et al., 2020). Furthermore, the traditional literature reviews in management fields have been heavily criticized because of systematization and transparency. Also more likely to be considered biased by the author's subjectivity (Hodgkinson & Ford, 2014). Therefore, specific principles and systematic review methodology are needed in this study to overcome the shortcomings. The difference between traditional literature reviews and systematic reviews lies in the data collection method section and the possibility of replication. Conventional literature reviews unfollow the strict rules to study collection, and usually, the study selection will follow the author's subjectivity as the main criterion. In contrast, systematic reviews do not use statistic and econometric procedures to combine the findings and analyze the data (Tranfield et al., 2003). There were two steps in using the Systematic Literature Review (S.L.R.), namely the setting of inclusion criteria and the strategy of locating and selecting the potential studies (Alderson et al., 2004).

3.2 Inclusion Criteria

There were four criteria for selecting and assessing potential studies in this study.

a) This study focussed on articles published between 2000 and 2021 inclusively in a peer-review journal. Thus, this study did not use other publication forms, such as books, newspaper articles, blog websites, unpublished works, and similar publications.
b) This study used empirical research belonging entirely or mainly to the port sector. So this study did not use theoretical and conceptual studies and case studies. But, the researcher did not restrict the data analysis used by the authors, both in the use of descriptive statistics and econometric methods.
c) This study focussed on a survey about dynamic capability in the port industry.
d) This study focussed on articles published using English.

3.3 Data Sources

The researcher carried out a computerized search using multiple keywords in six databases in this step. Here are the keywords.

Google Scholar

- Keywords: 'Dynamic Capability' and 'The Port'
- The period: 21 years (2000-2021)
- Language: 'English'

Emerald

- Keyword: 'Dynamic Capability' AND 'The Port'
- Year: '2000' to '2021'
- Content-Type: 'Article"

ScienceDirect (Elsevier)

- Keyword: 'Dynamic Capability' AND 'The Port'
- Year: '2000' to '2021'
- Article Type: 'Research Article'
- Subject Areas: 'Business, Management, and Accounting

Wiley

- Keyword: 'Dynamic Capability' AND 'The Port'
- Year: '2000' to '2021'
- Subject: 'Business and Management' AND 'Economics'
- Publication Type: 'Journals'

Sage

- Keyword: 'Dynamic Capability in the Port'

- Publication Date: '2000' to'2021'
- Subject: 'Management and Organization Studies'
- Article Type: 'Research Article'

Taylor & Francis

- Keyword: 'Dynamic Capability' AND 'The Port'
- Publication Date: '01/01/2000' to '12/31/2021'
- Subject: 'Economics, Finance, Business, and Industry'

Web of Science

- Keyword: 'Dynamic Capability in the Port'
- Core Collection: 'Science Citation Index Expanded (SCIE), Social Science Citation Index (SSCI), and Emerging Sources Citation Index
- Current Contents: 'Business Collection, Life Science, and Social & Behavioral Sciences

Using the keywords, the researcher found 324 papers in Google Scholar, 500 papers in Emerald, 508 papers in ScienceDirect, 610 in Wiley, 151 papers in Sage, 6,093 papers in Taylor & Francis, and 31 papers in Web of Science that potential for systematic review in this study. The computer managed all the selected articles, and this study also helped by using Microsoft Excel to input the articles found before.

4. Literature Search Results and Studies Selection

The researcher found 8,127 papers potentially relevant to this study using the keywords in six databases based on the literature review. And then, the papers were sorted based on title or abstract by generating as many as 8,074 papers that weren't appropriate and relevant to this study. Then the papers were re-sorted based on inclusion criteria by developing as many as 143 potential papers for this study. Next, the last sorting for the papers based on a more detailed search found ten documents that matched all the inclusion criteria for this study. One hundred and thirty-three articles that did not meet the inclusion criteria for this study are shown in Figure 1.

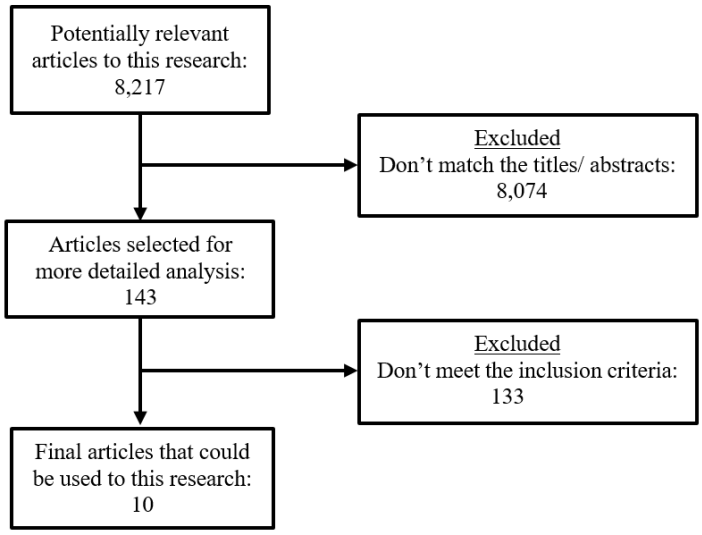

Figure 1. Systematic Review Flow Diagram

5. Results and Discussion

5.1 General Characteristics of Literature

Focus articles reviewed based on the publication years show that 2016 was a year with more articles than other years, 30%. However, starting from 2000-to 2013 with a minimal number of articles, each year was only worth 10% for the available articles. Therefore, 2016 and 2019 were the years that could support using the literature in this study, which was 30% and 20%, respectively. There was appropriate because technological developments in these years have increasingly endorsed it. So in these years, the port sector could apply the dynamic capability through used strategies

or tools to achieve competitiveness. Furthermore, technology development could also help solve problems towards dynamic capability.

Tabel 1. General Characteristics of Literature by Years of Article Publication

No.	Article Publication Years	Number of Articles	Percentage (%)
1.	2000	1	30
2.	2001	1	10
3.	2006	1	10
4.	2010	1	10
5.	2013	1	10
6.	2016	3	30
7.	2019	2	20
	Total	**10**	**100**

And the reviews of articles based on the publication countries show that Belgium was the country with the most number of articles compared with other countries, that was 30%. The rest followed by other countries each of which has a value of 10%. Belgium was chosen as the country with the most articles because this country has several ports that have experienced rapid development. However, certain parts of Belgium's ports may have not yet achieved a competitive advantage. So that many researchers want to research ports in that country

Tabel 2. General Characteristics of Literature by Countries of Article Publication

No.	Article Publication Countries	Number of Articles	Percentage (%)
1.	Belgium	3	30
2.	The U.K.	1	10
3.	Australia	1	10
4.	Italy	1	10
5.	Singapore and Belgium	1	10
6.	Spain	1	10
7.	Netherlands and U.K.	1	10
8.	China	1	10
	Total	**10**	**100**

The next was reviewed based on the publication area, which shows Europe had the most articles compared to 60%. The rest followed by other regions, each of which has a value of 10%. Europe was the area that has the most reference articles for this research because this area has a good coalition in the maritime and shipping industry. Many researchers want to analyze how the environmental conditions in their ports and how they maintain competitiveness in this dynamic and competitive environment.

Tabel 3. General Characteristics of Literature by Areas of Article Publication

No.	Article Publication Areas	Number of Articles	Percentage (%)
1.	Europe	6	60
2.	Oceania.	1	10
3.	Asia and Europe	1	10
4.	Southwestern and Europe	1	10
5.	East Asia	1	10
	Total	**10**	**100**

5.2 Research Analysis of Dynamic Capability in the Port Sector

The findings have been sorted before with the suitable criteria with the systematic review for this study. According to Haezendonck & Langenus's (2019) research, the effective measurement tool to see the strength and weakness of port cluster competitiveness were using an expanded competitiveness matrix. Furthermore, the productivity and flexibility of the labor group also be the main reason underlying the competitive advantage on Antwerp port. And they have found that too Antwerp port cluster has never achieved a significant competitive advantage in competition with the hinterland because of the existence of integration that becomes part of the strategy.

In another study conducted by Zhang (2019), the researcher merged with dynamic capability theory from strategic management to analyze and result in the strategy on the Zhoushan port and shipping industry. The merging generates a strategic integration model framework for the Zhoushan port and shipping industry. This model focus on strategy's dynamic adaptability to the external development environment and internal resources. And the model also could serve as a guide in evaluating the results of strategy implementation to Zoushan urban construction system and for the use of appropriate strategies that are suitable in maintaining the central competitiveness from port development and Zoushan shipping industry.

And the research conducted by Moya & Valero (2016) found that the strategy implemented by some port authorities still has shortcomings with the variable. Therefore, it needs special attention to identification, policy measurement, and particular system owned by port authorities. Its because port authority also could play an essential role in increasing efficiency and competitiveness toward the port. According to other research conducted by Justice et al. (2016), they found that endurance was the right tool for port in facing the change, and it also presents a challenge for port in meeting the changing environment. Therefore, the researcher recommended implementing complex adaptive systems and conceptualizing them for the port. The system could be a valuable tool for the port managers in managing the port in a complex and dynamic environment.

The next researcher (Parola et al., 2016) explained that hierarchy was the primary driver in port competitiveness. This study showed that the significant industrial transformation significantly impacts traditional environmental conditions and could change their relative importance. While according to (Yap et al., 2006), they concluded that competition between ports in East Asia estimated would increase because of the gravity of cargo volume shifting to Mainland China. Focus on most of the service in the shipping sector in the port main loading center could be the possible reasons why competition in East Asia port could happen. The main loading center in East Asia port will compete fiercely with ports located in the hinterland (Such as between Hong Kong and Shen Zhen, Busan and Kwangyang, Shanghai and Ningbo, etc.). The findings of this study were primarily the evidence that container shipping services call in East Asia.

According to Notteboom & Winkelmans (2001), the ports that follow the economies of scale approach didn't provide the tools required to secure the port position in the global transportation network and respond to the highly competitive market environment. The scope economy approach should either provide for or partially replace the economies of scale approach, focusing on logistic performance across the transport chain and greater flexibility. Therefore port authority could achieve a base of competitive advantage in the port that last longer and could build core competencies that competitors couldn't imitate. While the other researcher is McLaughlin & Fearon (2013), competitive maritime dynamics was a companion discussion as intended in the article. Each strategy response and teamwork require balancing international, national, and regional policy perspectives. The sustainable strategic response should balance the interest of stakeholders in the public and private sectors. The private sector also needs stable cooperation following the competitive maritime dynamics and global operators choosing an organized regional value chain network to meet their needs. Sustained cooperative responses should provide a strategy with a high degree of conformity to regional and economic policies.

Researchers used various strategies to deal with complex and constantly changing environments based on the previous literature review analysis results. The techniques used were expanding the competitiveness matrix, attention to labor productivity and flexibility, etc. The strategy explains their capability in reconfiguring their resource. Therefore, they must focus on using the dynamic capability to achieve their desired goals. And as already mentioned in section 2 before that, the dynamic capability is a tool that plays an essential role in achieving competitive advantage by improving or updating the resources and capabilities.

6. Summary and Conclusions

This paper aims to determine the relationship between dynamic capabilities in the port sector. This relationship can be demonstrated by describing and implementing dynamic capability in the industry. The model framework could describe dynamic capability by focusing on an expanded competitiveness matrix. Also, it used a strategy that focuses on dynamic adaptability to the external development environment and internal resources. The model framework has benefits for using appropriate strategies in maintaining central competitiveness. Moreover, a model framework focussed on port competitiveness combined with a detailed trading model and transportation network. Also could be used because this framework model has an essential role in describing the impact of strategy on the other port development and the development of hinterland transport in any specific socio-economic conditions and sectors.

Dynamic capabilities apply focussed on productivity and flexibility of workgroups to achieve competitive advantage. However, strategies can also be used, such as strategies that focus on mergers and alliances, implementing complex adaptive systems, implementing hierarchical procedures, providing or replacing economies of scale approaches, balancing strategic responses and teamwork. Also, use the other variables that supported the implementation strategy on port authority, where port authority also could play an essential role in increasing efficiency and competitiveness toward the port. It's hoped that this strategy could help the port respond to the complex and dynamic environment and maintain and achieve a competitive advantage in the port sector.

This study has some limitations. First, this study focussed on scientific articles published on a trusted source. Second, this study concentrated on empirical studies in scientific journals in the port sector and was published in 2000-2021 in peer-review journals. Third, this study focussed on Dynamic Capability in the port sector. And the last study concentrated on scientific articles that were published using English. Future research could develop research related to this research topic on other industries, such as industrial manufacturing, service, pharmacy, telecommunication, etc.

7. Implications for Practice

The findings of this study have two implications for management practices. First, the port manager should be responsive, seeing opportunities and following environmental conditions in any situation. To do this, the port manager could use the dynamic capability as a supporting tool in managing the port to increase productivity and flexibility of the labor group and support the implementation of strategies in the port sector. In addition, the use of dynamic capability could also help port managers apply it to particular ports and hinterland ports.

Second, the port should improve and renew the existing resources that focus on using dynamic capability as support tools. Therefore, the port still has the same position or even higher position than their competitors in facing the dynamic and competitive environment. Other than that, the port also should make good use of these repaired and renewed resources to achieve a competitive advantage in the strict industrial environment.

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