

# **Knowledge Based Orchestration: Response to The Dynamic Environmental COVID-19 Pandemic**

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## **Abstract**

Orchestration is a form of organizational response to the challenges of erratic environmental change, through organizational knowledge-based and collective efforts. Collaborative efforts of organizations to achieve better performance through ordinary capability and dynamic capability. Orchestration is performed through a combination of operating capabilities and dynamic capabilities, which are known as dynamic bundles. Studies to find new gaps are needed to expand dynamic bundles. Resources are an important factor, so orchestration is important regarding capabilities and resources. The combination of knowledge with capabilities is a source of organizational success. Knowledge-based resources, which are specialized knowledge, increase environmental awareness capabilities and are an important factor for performance. This paper aims to explore the role of bundles or resource configurations and capabilities and their contribution to performance outcomes.

This paper proposes a dynamic bundles orchestration that includes operational capabilities and dynamic capabilities as well as resources. In this research, the proposed resources are knowledge resources. Knowledge-based approach is important as a determinant of performance. This paper also contributes to conceptual knowledge in orchestration, or it can be called knowledge-based orchestration. Knowledge-based orchestration is expected to encourage organizations that have an impact on accelerating the recovery of the COVID-19 pandemic conditions.

## **Keywords:**

Orchestration, dynamic bundles, capability, knowledge resources, outcomes.

## 1. Introduction

The condition of environmental change due to the COVID-19 pandemic is an extraordinary event (Wyplosz, C., 2020), a condition at a high dynamic level, so it is necessary to configure various elements as a response to rapid change (Bharosa and Janssen, 2009). Dynamic capability is needed by organizations to respond. there are changes (Teece, 1997; Teece, 2007; Sune and Gibb, 2015; Balessteros et al., 2017). Rapid and effective response in situations of the COVID-19 outbreak is carried out through the unique capabilities and resources of the organization (Yang and Hsieh, 2013; Ballesteros, 2017).

Orchestration is a form of organizational response to the challenges of erratic environmental change, through organizational knowledge-based and joint efforts. Collaborative efforts of organizations to achieve better performance through ordinary capability and dynamic capability. Orchestration is performed through a combination of operating capabilities and dynamic capabilities, which are known as dynamic bundles. Studies to find new gaps are needed to expand dynamic bundles. Resources are an important factor, so orchestration is important regarding capabilities and resources. The combination of knowledge with capabilities is a source of organizational success. Knowledge-based resources, which are specialized knowledge, increase environmental awareness capabilities and are an important factor for performance.

### 1.1. Research Objectives

This paper aims to explore the role of bundles or resource configurations and capabilities and their contribution to performance outcomes. This paper proposes a dynamic bundles orchestration that includes operational capabilities and dynamic capabilities as well as resources. In this research, the proposed resources are knowledge resources. Knowledge-based approach is important as a determinant of performance. This paper also contributes to conceptual knowledge in orchestration, or it can be called knowledge-based orchestration.

## 2. Literature Review

### 2.1. Organizational Resources and Capabilities

Organizations develop supported by the resources they have, while one of the organizational resources is capability, and each organization has a different set of resources and capabilities (Wantao et al., 2018). According to Penate et al. (2019), the organization absolutely uses its resources and capabilities to deal with environmental changes.

Winter (2003) distinguishes capabilities in two levels of terminology: ordinary capabilities and dynamic capabilities. Experts call ordinary / operational capabilities and dynamic capabilities as higher-level capabilities (Teece et al., 1997 and Teece, 2018), operational and dynamic capabilities to describe first and second-order capabilities (Helfat and Winter, 2011). Operational capability is essentially the conversion of inputs to outputs which are carried out in routine operations (Helfat and Peteraf, 2003).

Zollo and Winter (2002) explored dynamic capabilities as a learning and stable pattern of collective activity, in order to modify operational processes and improve effectiveness. Operational capability is related to resources, as for dynamic capability in changing and reconfiguring operational capabilities (Zahra et al., 2006).

### 2.1. Orchestration

Understanding the term orchestration often refers to orchestration resources. One study on operations management based on resource-based theory (RBT), one of which focuses on resource management or asset orchestration (Hitt et al., 2016). Operations management literature shows the effectiveness of synchronizing resources for performance (Mirzaei et al., 2016). Orchestrating resources are important for developing and building an organization, which is considered potential to extend the understanding of RBT by explicitly addressing the role of managers' actions to effectively structure, bundle, and leverage resources (Sirmon et al., 2011).

Resource orchestration theory explains how managers can effectively combine resources for company performance, which is a complex major action (Hughes et al., 2018). Chadwick et al. (2015) defines resource orchestration as a combination of resources and managerial acumen to realize organizational performance. Managerial needs to understand the resources and capabilities of the organization.

### 3. Methods

The research method was structured using 3 stages, namely (1) tracing the concept of dynamic bundles, (2) tracing the concept of resources and knowledge-based capabilities, and (3) the concept of orchestration and contextual.

#### 3.1. First stage

At this stage, a brief search was made on the concept of dynamic bundles proposed by several researchers.

#### 3.2 Second stage

At this stage, a search for the concept of science-based resources and capabilities is carried out.

#### 3.2. Third stage

The third stage is the synthesis of the knowledge-based and contextual concept of orchestration during the COVID-19 pandemic.

### 4. Results and Discussion

Peteraf et al. (2013) proposed research to test the idea of dynamic bundles, which are a combination of resources and capabilities. Likewise Nenonen et al. (2018) directs the need for the idea of dynamics bundles testing which is a combination of resources and capabilities in further research. Ringov (2017) suggests a combination of dynamic bundles and their consequences for performance, in different environments. Meanwhile, Schriber and Leowstedt (2018) propose a longitudinal approach in dynamic capabilities research, by expanding how ordinary capabilities are developed together with dynamic capabilities. Cui et al. (2017) suggest the need for research on the relationship between orchestration and social innovation, through resources. It should be Table 1.

Table 1. Dynamic Bundles Idea

Researchers	Concept
Peteraf <i>et al.</i> (2013)	<ul style="list-style-type: none"> <li>Research to test the idea of dynamic bundles, which are combinations of resources and capabilities.</li> </ul>
Cui et al. (2017)	<ul style="list-style-type: none"> <li>Research the link between orchestration and social innovation, through resources.</li> </ul>
Ringov (2017)	<ul style="list-style-type: none"> <li>The combination of dynamic bundles and their consequences for performance, in different environments.</li> </ul>
Nenonen et al. (2018)	<ul style="list-style-type: none"> <li>The idea of dynamics bundles testing is a combination of resources and capabilities</li> </ul>
Schriber dan Leowstedt (2018)	<ul style="list-style-type: none"> <li>A longitudinal approach in dynamic capabilities research, by expanding how ordinary capabilities are developed alongside dynamic capabilities.</li> </ul>

#### 4.1. Knowledge Based Resources and Capability Concept

Knowledge is an important factor for performance (Germain et al., 2012), as well as a major source of innovation (Jeanerat and Kebir, 2016; Nagano, 2020). Hasnain (2015) relates it to environmental change, where knowledge helps organizations deal with environmental changes, through operations. Knowledge resources by some researchers are referred to as antecedents of dynamic capabilities (Chien and Tsie, 2012; Nieves and Haller, 2014, and Penate et al., 2019), and have an effect on innovation performance (Xie, 2018). In relation to innovation performance, Kaya and Patton (2011) prove that knowledge based resources have a significant effect. Wang et al. (2018) states that knowledge networks are antecedents of knowledge integration capabilities and innovation performance, in this case knowledge integration capabilities are a form of dynamic capabilities. Table 2 shows a summary of the concept.

Table 2. Knowledge Based Resources Concept

Researchers	Concept
Germain et al. (2012) Jeanerat dan Kebir (2016) Nagano (2020) Hasnain (2015)  Chien dan Tsie (2012) Nieves dan Haller (2014) Penate et al. (2019) Xie (2018). Kaya dan Patton (2011) Wang et al. (2018)	<ul style="list-style-type: none"> <li>• Knowledge is an important factor for performance as well as a major source of innovation.</li> <li>• Knowledge helps organizations in dealing with environmental changes, through operations.</li> <li>• Knowledge resources are referred to by some researchers as antecedents of dynamic capabilities</li> <li>• Knowledge based resources have a significant influence on innovation performance.</li> <li>• Knowledge networks are antecedents of knowledge integration capabilities and innovation performance, in this case knowledge integration capabilities are a form of dynamic capabilities.</li> </ul>

Cepeda and Vera (2007) in their research dismantle dynamic capabilities from a knowledge management perspective, which shows the relationship between dynamic capabilities and operational capabilities. With the expansion of changes in knowledge, dynamic capabilities contribute to organizational capabilities that have an impact on high performance (Zollo, 2006). Along with organizational development, the concept of dynamic capabilities is expanded to be knowledge based. Within this framework, encourages the development of knowledge-based dynamic capabilities (Zheng et al., 2011; Denford, 2013; Cheng et al., 2016). A summary of the concept is in the Table 3.

Table 3. Knowledge Based Dynamic Capability Concept

Researchers	Concept
Cepeda dan Vera (2007) Zollo (2006)  Zheng et al., (2011) Cheng et al. (2016) Denford (2013)	<ul style="list-style-type: none"> <li>• Dynamic capabilities in the knowledge management perspective, which shows the relationship between dynamic capabilities and operational capabilities.</li> <li>• With the expansion of changes in knowledge, dynamic capabilities contribute to organizational capabilities that have an impact on high performance.</li> <li>• Along with organizational development, the concept of dynamic capabilities is expanded to be knowledge based. Within this framework, encourage the development of knowledge-based dynamic capabilities.</li> </ul>

Value creation is very important for the successful operation of a company (Gronroos and Voima, 2013; Lindman et al., 2016). The literature in the fields of organization, strategy and operations management recognizes value creation as a process that enhances competitiveness (Borys and Jemison, 1989; Lindman et al., 2016). This theory now needs to be expanded in the context of knowledge-based value creation (Lowendahl et al., 2001; Cepeda and Vera, 2007). Bowman and Ambrosini (2007) identified five types of value creation activities, one of which is product manufacturing activities, such as production, logistics and input procurement activities. The concept is summarized in the Table 4.

Table 4. Knowledge Based Operations Concept

Researchers	Concept
Gronroos dan Voima (2013) Lindman et al. (2016). Borys dan Jemison (1989) Lindman et al. (2016). Lowendahl et al. (2001) Cepeda dan Vera (2007) Bowman dan Ambrosini (2007)	<ul style="list-style-type: none"> <li>• Value creation is essential to the successful operation of a company.</li> <li>• The literature in the fields of organization, strategy and operations management recognizes value creation as a process that enhances competitiveness</li> <li>• This theory now needs to be expanded in the context of knowledge-based value creation</li> <li>• Five types of value creation activities, one of which is product manufacturing activities, for example production, logistics and input procurement activities.</li> </ul>

#### 4.2. Knowledge Based Orchestration's Concept and Contextual

Paswan and Panda (2020) integrate resources, knowledge and capability in a framework that represents a form of asset. Denford (2013) implies knowledge-based dynamic capabilities with regard to outcomes, such as innovation, organizational climate and performance. The orchestration of resources and capabilities is needed to drive the organization to contribute to success in dealing with the COVID-19 pandemic through social innovation. Cui et al. (2017) suggest the need for research on the relationship between orchestration and social innovation, through detailed resource features. Dhanaraj and Parkhe (2006) state that there is an orchestration between asset resources and operating capabilities.

The events of various disasters in the world have given rise to experiences regarding disaster response and recovery efforts. In conditions of facing a disaster, the participation of various parties is required. The main focus of the government in handling a pandemic is to continue to prioritize public health and safety. Good handling in the health sector is the key so that economic handling that goes hand in hand can run well. These organizations include the public, government agencies (public services), the private sector and education (penta helix). Orchestration is likened to the conductor of a musician in an orchestra which functions to harmonize various abilities for value creation (Fung et al., 2008 and Silva, 2006). Organizations have important resources and capabilities, and need to be combined to create successful performance (Hughes, 2018).

Knowledge Based View (KBV) is a strategy through the use of resources, where knowledge is the main resource for the creation of new value, diversity and competitive advantage (Felin and Hesterly, 2007). KBV of an organization is a development of the Resource Based View (RBV), where KBV emphasizes the importance of organizational knowledge (Costelo, 2018). RBV views distinctive and unique resources as a source of organizational excellence, while KBV is based on the assumption that resources and capabilities are directed by knowledge (Denford, 2013).

The knowledge management view takes an organizational perspective to enhance knowledge-based value creation (Carrillo et al., 2019). Capabilities are organizational processes and routines that are rooted in knowledge. The knowledge management process and knowledge configuration are part of the development and utilization of new dynamic capabilities and operational capabilities as the output of dynamic capabilities. The knowledge and capability-based view (KBV) in strategy extends largely rationale based resources by suggesting that knowledge is a major resource underlying new value creation, heterogeneity, and the competitive advantages of conceptualization of knowledge and has critical implications for the future of KBV and related efforts to understand the creation of new value (Felin and Hesterly, 2007).

Knowledge-based approach is important as a determinant of performance. This paper proposes the conceptual contribution of knowledge in orchestration, or it can be called knowledge-based orchestration. Environmental change and disaster situations encourage knowledge-driven response efforts. Knowledge-based orchestration is expected to encourage organizations that have an impact on accelerating the recovery of the COVID-19 pandemic conditions. The orchestration of resources and capabilities is needed to drive the organization, which contributes to success in dealing with the COVID-19 pandemic. The concept of knowledge based orchestration is proposed through the following conceptual framework in Figure 1.

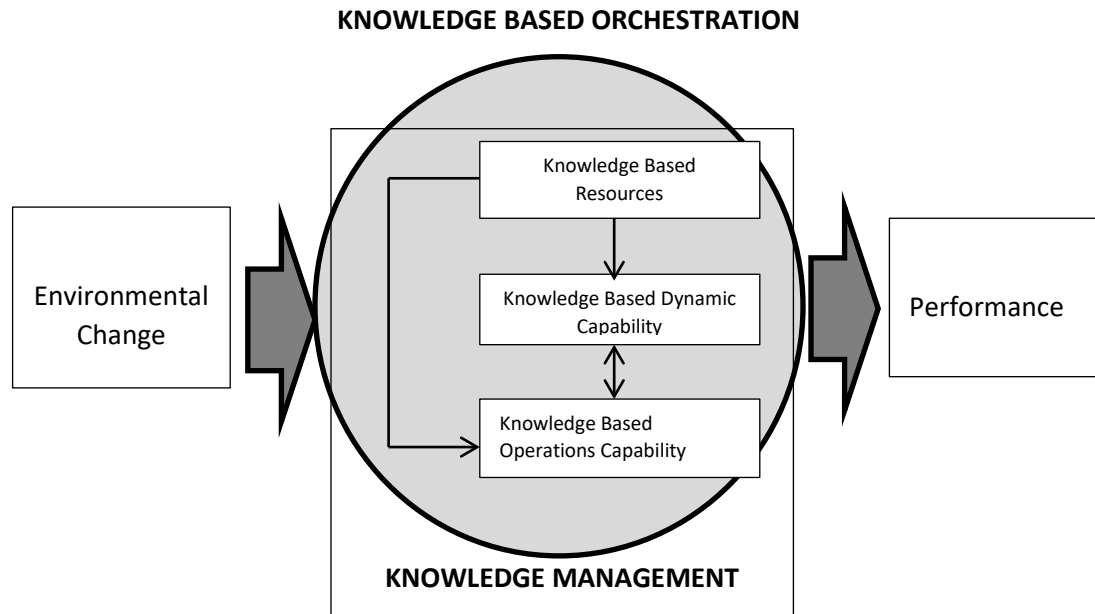


Figure 1. Knowledge Based Orchestration Conceptual Framework

## 5. Conclusion

The condition of environmental change due to the COVID-19 pandemic is an extraordinary event (Wyplosz, C., 2020), a condition at a high dynamic level, so it is necessary to configure various elements as a response to rapid change (Bharosa and Janssen, 2009). The impact of environmental changes has implications for the organization's efforts to achieve better performance through increased ordinary capability in a stable environment and dynamic capabilities in dynamic environments (Drnevich and Kriauciunas, 2011). Organizations have important resources and capabilities, and need to be combined to create successful performance (Hughes, 2018).

Researchers Peteraf et al. (2013), Schriber and Leowstedt, (2019) propose research to test the combination of resources and capabilities, dynamic capabilities and dynamic non-capabilities (ordinary). Dynamic capabilities are needed by governments and other organizations to respond to change quickly and effectively (Teece, 1997; Teece, 2007; Sune and Gibb, 2015, Ballesteros et al., 2017). Rapid and effective response in situations of the COVID-19 outbreak is carried out through the unique capabilities and resources of the organization (Yang and Hsieh, 2013); Ballesteros, 2017) in order to produce positive outcomes for society (society).

This paper proposes the conceptual contribution of knowledge in orchestration, or it can be called knowledge-based orchestration. Environmental change and disaster situations encourage knowledge-driven response efforts. Knowledge-based orchestration is expected to encourage organizations that have an impact on accelerating the recovery of the COVID-19 pandemic conditions.

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