# Sustainable supply chain clusters: An integrated framework

<table>
<thead>
<tr>
<th>Journal:</th>
<th>Management Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manuscript ID</td>
<td>MD-03-2021-0400.R3</td>
</tr>
<tr>
<td>Manuscript Type</td>
<td>Original Article</td>
</tr>
<tr>
<td>Keywords:</td>
<td>Resilience, Absorptive capacity, Sustainability, Supply chain cluster, Organizational performance</td>
</tr>
</tbody>
</table>
ABSTRACT:

This research aims to provide a conceptual framework with the scope to assist in establishing sustainable supply chain clusters (SCC) by providing an instrument for organisations to enhance the three sustainability dimensions in a dynamic environment.

This research proposes a conceptual framework to enhance sustainability and organisational performance through three theoretical lenses: systems theory, extended resource-based view and dynamic capabilities theory. This approach is carried out through a comprehensive review of the existing literature on SCCs.

Four main propositions are formulated and demonstrated using the developed framework, which expands the discussion about SCCs and their key characteristics in a dynamic environment. This is particularly relevant as it allows empirical testing of the theories in a SCC context.

It can be noted that more extensive research is needed to further understand the issues faced in establishing sustainable clusters. Drawing on the theoretical lenses to establish the framework helps to enhance the understanding and operational capabilities of sustainable SCCs during and after disruptions, such as the global disruption created by COVID-19.

This research paves the way to help organisations improve their adaptability to the dynamic business environment by emphasizing the importance of clustering and linking it to sustainability through dynamic capabilities (DC) to establish a sustainable cluster.

CUST_SOCIAL_IMPLICATIONS_(LIMIT_100_WORDS): No data available.

This research aims to guide organisations’ use of SCCs as tools to enhance sustainability in a dynamic environment, given that the relationship among supply chain cluster design characteristics (SCCDCs), DCs and sustainability remains unexplored. The combination of the three theoretical lenses in developing the proposed framework will assist in further understanding the applicability of these theories when they are considered together.
Sustainable supply chain clusters: An integrated framework

Abstract:

Purpose: This research aims to provide a conceptual framework with the scope to assist in establishing sustainable supply chain clusters (SCC) by providing an instrument for organisations to enhance the three sustainability dimensions in a dynamic environment.

Design/methodology/approach: This research proposes a conceptual framework to enhance sustainability and organisational performance through three theoretical lenses: systems theory, extended resource-based view and dynamic capabilities theory. This approach is carried out through a comprehensive review of the existing literature on SCCs.

Findings: Four main propositions are formulated and demonstrated using the developed framework, which expands the discussion about SCCs and their key characteristics in a dynamic environment. This is particularly relevant as it allows empirical testing of the theories in a SCC context.

Research implications: It can be noted that more extensive research is needed to further understand the issues faced in establishing sustainable clusters. Drawing on the theoretical lenses to establish the framework helps to enhance the understanding and operational capabilities of sustainable SCCs during and after disruptions, such as the global disruption created by COVID-19.

Practical implications: This research paves the way to help organisations improve their adaptability to the dynamic business environment by emphasizing the importance of clustering and linking it to sustainability through dynamic capabilities (DC) to establish a sustainable cluster.

Originality/value: This research aims to guide organisations’ use of SCCs as tools to enhance sustainability in a dynamic environment, given that the relationship among supply chain cluster design characteristics (SCCDCs), DCs and sustainability remains unexplored. The combination of the three theoretical lenses in developing the proposed framework will assist in further understanding the applicability of these theories when they are considered together.

Keywords: Resilience, absorptive capacity, sustainability, supply chain cluster, organisational performance.

Paper type: Conceptual paper
1. Introduction
Global supply chains can be disturbed because of trade restrictions that occurs due to disruptive events, (e.g. COVID-19, war, natural disasters, etc.), which leads to issues, such as product unavailability in local markets and great fluctuations in demand for products (Cappelli and Cini, 2020). In some cases, relying on local suppliers can help overcome this problem by securing a steady flow of materials and eventually enhancing organisational financial and non-financial performance (e.g. quality control and sales growth inside organisations operating in a SCC (Huo et al., 2014, Cappelli and Cini, 2020); however, this may not be the case when particular products and services are required. Forming supply chain clusters (SCCs) (Tolossa et al., 2013) can play a significant role in establishing secure, steady flows of resources and skills (Geng et al., 2013a, Tolossa et al., 2013, Porter, 1998). SCCs represent an integration of supply chain management practices and industrial clusters for organisations operating in the same geographical locations (Huang and Xue, 2012).

The connectedness and collaboration among SCCs members can play an important role to enhance productivity and problem solving (Lei and Huang, 2014), leading to stronger local networks (Tolossa et al., 2013) that can contribute in enhancing the efficient use of resources (Foghani et al., 2017). This in turn is envisaged to enhance sustainability (e.g. decrease in purchasing and manufacturing cost (Ruiz-Benitez et al., 2019), decline in toxic materials used and waste (Ruiz-Benitez et al., 2019), and aim for achieving better work conditions (Grimstad and Burgess, 2014, Golubic et al., 2017) and organisational performance (Albuquerque et al., 2020). It should be noted that, in the long run, the frequent occurrence of disruptive events (e.g., pandemic disease and natural disasters (Annarelli and Nonino, 2016)) can severely damage highly connected organisations within a SCC due to cascading failure (Geng et al., 2013a). In order to support organisations’ adaptability to the constantly changing business environment, dynamic capabilities are needed to enhance, expand and protect organisations’
tangible and intangible (knowledge base) assets (Teece, 2007, Helfat et al., 2007), as SCC members are highly interconnected and interdependent; therefore, a failure of one organisation, for example a delay in announcing information, will disrupt the operations of the whole SCC (Wang and Xiao, 2016a, Geng et al., 2013a). Hence, in order to enhance sustainability (Golicic et al., 2017) and organisational performance (Riikkinen et al., 2017), it is imperative for SCC members to consider developing dynamic capabilities (DCs) (Golicic et al., 2017) that will allow them to improve and protect their assets during disruptions (Teece, 2007, Kraaijenbrink et al., 2010).

Furthermore, to combat the challenges arising from disruptive events, such as COVID-19 pandemic (Cappelli and Cini, 2020), organisations and supply chain practitioners must develop both dynamic capabilities as well as sustainability approaches. However, extant research on supply chain cluster either focuses on one aspect of dynamic capability (e.g. resilience, Chowdhury and Quaddus, 2017) or on one dimension of sustainability (e.g. environmental sustainability, Walton et al., 2020). Comprehensive conceptualization of dynamic capability and sustainability as well as their interrelationships in the context of supply chain cluster are still aspects in the literature that require further attention.

Beyond that, to help supply chain practitioners better understand the complex cluster design, unbundling the structure of supply chain cluster design characteristics (SCCDCs) and understanding their relations to other factors is of utmost importance. According to (Golicic et al., 2017), with the efficient use of SCCDCs, organisations could successfully enhance sustainability and performance, thereby manage challenges in business environment (Bag et al., 2019, Golicic et al., 2017).

In such a turbulent era, where COVID-19 and other disruptions keep posing challenges for business organisations, the way in which SCCDCs, DCs, sustainability and organisational performance can be linked to each other is a timely issue to delve into. However, there is a
considerable limited understanding of how SCCDCs can affect organisations’ performances through DCs and sustainability (Lis and Rozkwitalska, 2020, Golicic et al., 2017). Although there’s much to learn from the extant research on sustainability and organisational performance based on ST or ERBV/RBV (e.g. Bag et al. 2020a, Al-Shammari et al. 2022, Jain et al. 2022, Asiaei et al., 2022), limited is known regarding such issues in the context of supply chain clusters with considerations of DC. There’s also a relative absence of research on SCCs and performance in the existing efforts into DC and sustainability (e.g. Mousavi et al. 2018, Oliveira-Dias et al. 2022). Even less is known about how the two aspects (absorptive capacity and resilience) of DCs are linking SCCDCs and the three dimensions of sustainability, as prior research has predominantly focused on only one aspect of DC or one dimension of sustainability (e.g. Mota et al. 2022). The main contribution of this research thus lies in alleviating these research gaps, by developing a conceptual framework to provide a more holistic picture. This research is among the first to integrate the three theoretical lenses - system theory (ST), extended resource-based view (ERBV) and dynamic capability (DC) theory, to provide a comprehensive conceptualization and analysis on the interrelationships between SCCDCs, DCs, sustainability and organisational performance.

The failure of one organisation in the SCC to deliver materials and/or information on time will disrupt the operations of all other organisations in the SCC because they are interdependent and interconnected (Wang and Xiao, 2016b, Geng et al., 2013b). However, through developing dynamic capabilities organisations can adapt and respond to market changes (Teece, 2016a, Teece, 2007), become more sustainable (Zahra and George, 2002, Riikkinen et al., 2017). In addition, organisations tend not to focus on sustainability during destructive or disruptive events (Mari et al., 2016), dynamic capabilities (Teece, 2007), such as resilience and absorptive capacity (Shubham and Murty, 2018), are particularly important in helping organisations achieve long-term sustainability in constantly changing environments.
through modifying their environmental, social and economic sustainability processes whenever the market changes (Fiksel et al., 2014).

Finally, it is very important to implement sustainable practices in supply chain clusters as the concentration of industrial and logistics activities such as transportation raise environmental issues and harm the surrounding communities (UNIDO, 2016b). In other words, the conceptual framework of this research can serve as a tool to help organizations identify areas that need specific improvement and manage SCCs in a more sustainable, efficient and productive way. In addition, it will support small and medium enterprises through clusters to enhance their global competitive position (Foghani et al., 2017). Finally, the proposed framework supports sustainability development in the post COVID-19 era, especially that the recession caused by COVID-19 forced some governments to neglect enforcing laws regulating sustainability practices implementation in order to make more rapid economic recovery (Sarkis, 2021). Therefore, this research presents the conceptual framework as a tool to manage SCC efficiently, in order to enhance value creation and eventually sustainability. This framework can also arguably help governments achieve sustainable development goals (SDGs) (UN, 2018a).

The findings of this particular research will benefit organization’s decision makers who are operating in a supply chain cluster with knowledge of the elements required to ensure sustainability and performance as well as the strategies to overcome business vulnerabilities. Another contribution of this study is to unwind the impact of DCs on the three dimensions of sustainability (economic, social and environmental dimensions) in an SCC context (Golicic et al., 2017, Albot-Morant et al., 2018, Aboelmaged and Hashem, 2019) as well as the impact of sustainability dimensions on organizational financial and non-financial performance (Das et al., 2019) which are limited in the existing supply chain management literature. The framework proposed in this study is expected to help organizations understand the interplay between DCs
and performance with the three dimensions of sustainability, thus developing effective sustainability approaches through DCs for supply chain clusters. This study not only can assist industry practitioners in establishing sustainable clusters through implementation of sustainable practices in SCCs, but also highlight the importance of other stakeholders (e.g. government, universities and industrial associations) in supporting activities such as job creation, economic enhancement, and environmental and resource conservation within a supply chain cluster.

The remainder of this paper discusses the theoretical lenses that the framework will be built on. Then, it discusses the rationale for using these lenses that link SCCDCs, DCs (resilience and absorptive capacity), sustainability and organizational performance (financial and operational). A review of the literature is then presented, followed by a summary of the identified research gaps and the proposed conceptual framework. Then, the paper discusses the research model and propositions. Finally, theoretical and practical contributions and recommendations for future research are presented.

2. Theoretical foundation

2.1 Systems theory

System Theory focuses on coordinating subsystems to observe the performance of the entire system (Forrester, 1961), which can be applied in organisations by investigating individual parts to add value to an entire organisation (Emery and Trist, 1965). However, this theory can be extended beyond individual firms’ boundaries to reach their business partners within the supply chain (Rigby et al., 2000, Fantazy et al., 2016, Bag et al., 2020a, Tipi, 2021), where individual organisations are coming together to form a system of analysis and adapt to their external dynamic environments to survive (Baier et al., 2020, Bag et al., 2020a). ST stresses on a holistic approach, where the focus moves from individual organisational performance.
(subsystem) to value creation for the whole supply chain (the whole system) (Fatorachian and Kazemi, 2021). Since the risk associated with market changes and uncertainty is the link that connects organisations (Peck, 2005), it can be argued that, under ST perspective, an organisation’s interaction with the external environment (Baier et al., 2020) can eventually help in enhancing its internal structure and functions to deal with the constantly changing business environment (Thompson and Valentinov, 2017), which could lead to an increase in the performance of the entire supply chain (Fatorachian and Kazemi, 2021).

In this sense, it is proposed that supply chain members should collaborate to enhance the value of the supply chain system under analysis; the focus should not only be on a subsystem within their boundaries (Cooper et al., 1997), but it should be on the entire system (Tipi, 2021). System theory is associated with supply chain management (Fantazy et al., 2016) because it promotes the efficient flow of information, materials and capital throughout the supply chain (Mentzer et al., 2001) and encourages the analysis to be considered at system level, where all sets of flows and operations are taken into account (Hassan, 2006). The integration and collaboration of supply chain subsystems (supply chain members and their different functions) help enhance their performance and, eventually, the overall performance of a supply chain (Flynn et al., 2010, Michalski et al., 2018).

2.2 Extended resource-based view
The resource-based view (RBV) or resource-based theory focuses on how a firm can sustain a competitive advantage by achieving superior performance (Bag et al., 2019, Xi et al., 2014) using internal resources and the factors that enable a firm to outperform its peers in the same industry (Kraaijenbrink et al., 2010). Internal resources are unique to every firm and encompass tangible assets and intangible assets, such as the organisation’s skills, information and knowledge. Organisations can control these resources to sustain their competitive advantage (Barney, 1991). RBV considers networking as a resource that can enhance organisational
performance (Ye et al., 2020), as networks allow organisations to have access to resources required to enhance their performance (Loi, 2016). This falls in line with the RBV supply chain approach as it assumes that the resources needed to enhance organisational performance are at the supply chain level, making the supply chain a competitive advantage tool (Ketchen and Hult, 2007).

This notion is discussed in the ERBV, which stresses the fact that organisations mine for resources that can be outside their boundaries to enhance their competitive advantages (Son et al., 2014). The ERBV focuses on how organisations need to extend their resources through forming alliances with other entities, such as their suppliers (Popli et al., 2017, Mishra et al., 2019), governmental agencies and other entities inside the same geographical area or region (Mishra et al., 2019).

2.3 Dynamic capabilities theory

Through the ERBV, organisations can create value—an important aim—by acquiring resources that exist outside their boundaries (Son et al., 2014, Mishra et al., 2019). Because the external environment of any organisation is extremely volatile (Ponomarov, 2012), organisations can only create value if they manage to integrate resources to seize opportunities and overcome uncertainties that present themselves in their surrounding dynamic environments (Barney, 1991, Chowdhury and Quaddus, 2017). Market uncertainties make it difficult for organisations to sustain a competitive advantage (Eisenhardt and Martin, 2000) and enhance organisational performance (Bag et al., 2019, Xi et al., 2014) because they need to focus on responding to unexpected fluctuations in demand and supply and not only to survive (Ponomarov, 2012).

However, organisations can still sustain their competitive advantages when they strategically apply DCs (Eisenhardt and Martin, 2000). These capabilities allow organisations
to reconfigure their resources (Teece, 2019) to quickly adapt to market changes and leap in front of competitors (Eisenhardt and Martin, 2000). DC theory focuses on sustaining competitive advantage in a dynamic business environment (Bag et al., 2020b) through building DCs that will allow organisations to reconfigure and reallocate their resources (Breidbach et al., 2015). In addition, it is argued that DCs can enhance organisations’ ability to create resources to enhance sustainability in a constantly changing environment (Bag et al., 2019).

This perspective encourages organisations within a supply chain network to strengthen their alliances in order to be more adaptable to the dynamic business environment (Piprani et al., 2020). In a SCC context, the resources (tangible and intangible) shared among SCC members can be a tool for organisations to respond to market changes through building DCs (Ye et al., 2020). Based on these three theories, the theoretical framework will be developed in the following section.

2.4 Theoretical framework

Based on the research presented above and the definition of the theories illustrated in subsections 2.1, 2.3 and 2.4, Figure 1 was formulated to present a corresponding theoretical framework.

---

Figure 1: Theoretical framework

- **Networks and connectedness through clustering**
  - System theory (Rigby et al., 2000)
  - Extended resource-based view (Mathews, 2003)

- **Dynamic capabilities**
  - Dynamic capability theory (Teece, Pisano, and Shuen 1997)

- **Sustainable development**
  - Extended resource-based view (Mathews, 2003)

- **Performance outcomes**
  - System theory (Rigby et al., 2000)
  - Extended resource-based view (Mathews, 2003)
ERBV focuses on the notion that infrastructure of resources can be used to enhance sustainability (Al-Shammari et al., 2022) and remove stakeholders pressure to focus on sustainability issues, which eventually enhances their satisfaction (Munir et al., 2020). This enhanced sustainability (Albuquerque et al., 2020), along with infrastructure of resources, organisations can increase their performance levels (Loi, 2016, Battisti et al., 2022). RBV stresses on the fact that internal resources and capabilities of the organisations are essential for their sustainable competitive advantage (Hermundsdottir and Aspelund, 2022). Combining ST logic to the above argument, organisations can have access to infrastructure of resources available through the integration and collaboration of supply chain subsystems (supply chain members and their different functions), which helps in enhancing overall performance of the supply chain (Flynn et al., 2010, Michalski et al., 2018, Tipi, 2021). In addition, collaboration with entities, such as suppliers, governmental agencies and other entities in the same geographical area or region, can help in extending organisational resources (Popli et al., 2017, Mishra et al., 2019). In this sense, supply chains’ integration helps members maximise their overall value through quick processing of information, joint learning and knowledge creation (Fantazy et al., 2016). However, for organisations to protect and develop their resources and maintain a high degree of sustainability in a constantly changing environment, they need to build DCs (Teece et al., 1997). This justifies the introduction of DC theory to the framework, as organisations will be able to enhance sustainability through developing, renewing and protecting their resources to cope with the disruptions in the market (Teece et al., 1997, Teece, 2007) and their supply chain (Tipi, 2021). In return, high sustainability performance will give organisations a competitive edge and eventually enhance their performance (Munir et al., 2022).
3. Literature review

3.1 SCCDCs

Supply chain management helps align SCC members’ efforts and enhance their cooperation (Huang and Xue, 2012). In this sense, competitors, as well as business partners, work together to enhance overall cluster development (Xin and Li-ying, 2013). The importance of supply chain management to clusters pushed the integration and creation of SCCs (Huang and Xue, 2012, Geng et al., 2013a). Collaboration among competitors inside the same SCC is possible and beneficial (Porter, 1998). Competitors can face similar operational issues in the surrounding environment (Hurmelinna - Laukkanen, 2012), such as common technological problems (Endres et al., 2020); sharing selective knowledge among competitors can promote collaborative research and development (Hurmelinna - Laukkanen, 2012), which can then help in maintaining their performance (Hurmelinna - Laukkanen, 2012, Alves and Galina, 2021). However, there is a debate of how information sharing through networked collaboration can affect organisational competitive advantage, as some organisations tend not to share valuable information in order to protect their comparative advantage (Lei and Huang, 2014). In addition, the cost of sharing information among competitors might outweigh its benefits, as illustrated through the empirical study of Yuan et al. (2021). Still, there is empirical evidence that supports the positive impact of networked collaboration on organisational performance in a supply SCC context (Ye et al., 2020). It can be argued that using trust (Geng et al., 2013a) to manage and promote competition as a win-win situation (Monteiro, 2016) can facilitate innovation and value creation (Mikhaylov, 2013, Lu and Shin, 2018). This can eventually lead to continuous cluster development (Xin and Li-ying, 2013, Dana et al., 2013, Yuan et al., 2021) and positively affect economic growth (Monteiro, 2016, Dong, 2011).

The importance of SCCs shifted the focus to their characteristics and design. Huang
and Xue (2012) and Tolossa et al. (2013) proposed three main characteristics: geographical concentration, networked collaboration and supporting services. Geographical concentration is very critical when creating a SCC because the close physical proximity of its members makes it possible to increase cost efficiency, competitive advantage, trust and innovation (He, 2016, Huang and Xue, 2012, Tolossa et al., 2013). Networked collaboration means that upstream and downstream vertical cooperation exists within the supply chain, and horizontal integration exists among different supply chains. This horizontal and vertical collaboration yields a competitive advantage and helps organisations achieve a higher degree of organisational performance that they could not reach on their own through interactive activities, such as sharing resources and information (Xue et al., 2012). Supporting service systems are entities that enhance SCC members’ collaboration by increasing coordination with related companies, facilitating access to information and increasing productivity (Huang and Xue, 2012, Tolossa et al., 2013). Geng et al. (2013a) argued that these characteristics give an advantage to entities in SCCs, make them more adaptive to sudden changes in the market and provide international support to their competitive advantages, in addition to enhancing support among members. Thus, these characteristics can provide a fertile environment for improving sustainability (Grimstad and Burgess, 2014, Golicic et al., 2017) because the coordination efforts among SCC members can help maintain significant sustainability (Lin et al., 2020).

3.2 Sustainability

Market conditions are constantly changing, which leads to an inefficient use of resources and negative impact on sustainability activities’ progress (Herstatt and Tiwari, 2020), as market volatility forces some organisations to focus on economic aspects at the expense of environmental and economic sustainability (Rajeev et al., 2017). This emphasizes the fact that organisations need to embed their sustainability activities into their strategic plan (Sarkis, 2021) in order to gain a competitive edge (Ozturkoglu et al., 2021), especially that
governments, customers and other stakeholders are pressuring organisations and are willing to coordinate in order to support organisations focus on all aspects of sustainability issues (Munir et al., 2020). This coordination of efforts can be facilitated through sustainable clusters because they primarily focus on the collaborative efforts among organisations, governments and communities to work together and promote the three aspects of sustainability (economic, social and environmental) (Hong and Gasparatos, 2020).

Economic sustainability focuses on efficient and effective use of resources, which means using the minimum amount of resources to achieve maximum output and using resources in the best way possible (Agrawal et al., 2016). This can be achieved by decreasing operational, logistics and energy use cost (Agrawal et al., 2016), in addition to preserving renewable resources (Tam, 2018). Environmental sustainability revolves around avoiding damage to the nature in the surrounding environment through focusing on waste management, emission, saving energy consumption, resources, switching to renewable energy and complying with environmental standards (Agrawal et al., 2016). Social sustainability focuses on the responsibility of the organisation towards the community (improving relationships and life quality of the community (Abdul-Rashid et al., 2017) by promoting equality, social justice, customer safety and employees' benefits and stability (Workforce health and safety) (Agrawal et al., 2016).

3.3 Sustainability and organisational performance

Researchers have highlighted that organisations should attempt to enhance their efforts to improve the local economy; efficiently use resources and decrease waste, water, and air pollution (Panyathanakun et al., 2013) to reduce cost and energy consumption (Hollos et al., 2012) and enhance operational (Reuter et al., 2010) and financial performance (Albuquerque et al., 2020). Such measures are also expected to enhance job creation and better work conditions and generally improve a community’s quality of life (Panyathanakun et al., 2013).
Furthermore, these effects are expected to contribute in increasing overall organisational performance and economic growth (Panyathanakun et al., 2013). It is therefore relevant for individuals within the community to focus on investments that support environmental and social aspects, spread awareness, and apply pressure as customers on the public and private policy makers (UNIDO, 2016a). The overall organisational performance is divided into operational performance and financial performance as the key performance measures (Ferreira and Otley, 2009). The focus of operational performance is on the quality enhancement, efficiency, productivity and customer satisfaction (Gligor and Holcomb, 2014, Huo et al., 2014). Regarding for financial performance, it focuses on market share, sales and return on investment (Huo et al., 2014).

3.4 DCs and sustainability

The requirements of adaptation to environmental uncertainty (Di Stefano et al., 2014, Teece, 2016b, Chowdhury et al., 2019) and the influence of sustainability on survival and growth (Kolk and Pinkse, 2008) urge organisations to develop sustainability (Chowdhury et al., 2019, Teece, 2016b) through DCs (Di Stefano et al., 2014, Teece, 2016b), such as resilience and absorptive capacity (Shubham and Murty, 2018), which allows them to seize opportunities in the market (Di Stefano et al., 2014) and effectively align their strategies and capabilities to develop sustainability (Amui et al., 2017), which falls in line with the achievement of (SDGs (UN, 2018a)). Absorptive capacity (AC) is considered to be playing an important role in enhancing sustainability (Chowdhury et al., 2019) through collaborative practices (Kauppi et al., 2013), as it incentivises organisations to share sustainability knowledge (Beske et al., 2014). Therefore, absorptive capacity (AC) is needed to implement strategic proactive sustainability practices (Saenz et al., 2014) as it allows organisations to identify and acquire knowledge-related sustainability, such as new environmental compliance requirements outside its boundaries, from regulators and research institutions (Shubham and Murty, 2018).
acquired knowledge from the external environment is exploited to refine sustainability practices within the organisation (Reuter et al., 2010).

It is argued that sustainability can also be achieved by implementing resilience practices, such as a flexible supply base, information control system, disaster recovery plan, contingency planning, alternative transportation routing, connectedness and others (Ruiz-Benitez et al., 2019). Resilience in the supply chain is seen as the capability of the system, and in this case the supply chain system, to recover to full operational capacity after disruptions (Tipi and Elgazzar, 2021). These practices could decrease purchasing and manufacturing costs, which eventually enhances economic sustainability (Ruiz-Benitez et al., 2019). In addition, used toxic materials and wastes could decline, which directly enhances environmental sustainability. Finally, resilience practices help reduce the negative impact on society by allowing business partners to recover quickly using a well-established coordinated plan to ensure public safety and a healthy environment (Ruiz-Benitez et al., 2019).

3.1 Research Gaps

3.1.1 Empirical

Previous literature on SCC has primarily focused on how firms in a cluster can develop DCs, such as resilience (Fagundes et al., 2020) and absorptive capability (Chandrashekar and Mungila Hillemane, 2018, Presutti et al., 2017). For example, Belso-Martínez et al. (2016) examined the relationship between network density, reciprocity and transitivity, and absorptive capacity. Lis and Rozkwitalska (2020) investigated how being in a cluster can affect organisational technological capability through accumulation of knowledge, which is facilitated by absorptive capacity. Lei and Huang (2014) focused on geographical concentration and knowledge sharing, while Presutti et al. (2017) focused on close proximity to customers and its impact on absorptive capacity. Other research studies focused on specific
clusters to investigate how organisations’ resilience or absorptive capacity can be affected when they are operating inside a cluster. In addition, organisations in these clusters were mostly operating in high-tech industries located in developed countries. For example, Belso-Martínez et al. (2016) and Martinez-Sanchez et al. (2019) conducted the research on high-tech industrial cluster and absorptive capacity in Spain. The authors concluded that absorptive capacity can positively enhance innovative performance of organisations inside clusters, whereas Conz et al. (2017) investigated how organisations can enhance their resilience in wine clusters located in Europe. Golicic et al. (2017) also focused on wine clusters and resilience; however, the research scope was USA, Australia, Italy and New Zealand. Walton et al. (2020) focused on learning and knowledge sharing and green practices, while Riikkinen et al. (2017) focused on absorptive capacity and green purchasing practices.

Based on the above discussion, it can be concluded that previous research focused on the relationship between information sharing among SCC members and absorptive capacity (e.g. Belso-Martínez et al., 2016) or close proximity to customers and absorptive capacity (e.g. Presutti et al., 2017), in addition to the relationship between local networks and absorptive capacity (Chandrashekar and Mungila Hillemane, 2018). Furthermore, researchers investigated how organisations operating in a cluster can develop resilience or absorptive capacity. However, the focus was on organisations; there was no investigation on how being in a cluster can affect their resilience or absorptive capacity (Taslimi et al., 2020, Martinez-Sanchez et al., 2019). In other words, the focus is mainly on organisations, and relatively less is known on how being in a cluster (i.e. SCCDCs) may affect the cluster members’ DCs (Martinez-Sanchez et al., 2019, Taslimi et al., 2020). Finally, the impact of resilience on financial sustainability was investigated in wine industry, without including SCCDCs in the investigation (e.g. Golicic et al., 2017).
In the supply chain management literature, there have been substantial research efforts on the relationship between DCs (resilience and absorptive capability) of organisations and their sustainability (Aboelmaged and Hashem, 2019, Albort-Morant et al., 2018, Golicic et al., 2017). The focus has been predominantly placed on environmental sustainability (Walton et al., 2020), while there is a lack of comprehension of the underlining dimensions of sustainability (i.e. economic, social and environmental) and how they are linked with DCs (Ruiz-Benitez et al., 2019, Touboulic and Walker, 2015). Furthermore, emerging research argues that the relationships between sustainability dimensions and organisational performance remain ambiguous and controversial (Paulraj et al., 2017). A more nuanced understanding of the impact of sustainability on organisational performance (including financial and non-financial measures) is thus needed, which is also called for by other scholars (Das et al., 2019), especially that the relationship between sustainability and organisational performance in supply chain management literature is under debate (Paulraj et al., 2017). In addition, research investigating the impact of sustainability and organisational performance focused on green practices and financial performance (Albuquerque et al., 2020, Song and Choi, 2018).

3.1.2 Theorical

Although there are fruitful studies on supply chain management and sustainability, these studies were either based on system theory, resource-based view (or extended resource based view) or DC theory (Fantazy et al., 2016, Son et al., 2014, Teece, 2019). However, research efforts combing these theories to develop a conceptual framework for a more holitisc understanding of organisations in a SCC context are limited. For example, Ye et al. (2020) focused on resources sharing and collaboration among cluster members and their impact on members’ performance through utilizing DC theory. Gupta et al. (2019) and Quaye and Mensah (2019) also utilized RBV and DC theory to investigate resources sharing and collaboration impact on organisational performance. However, there was no focus on SCCs or
sustainability. While Al-Shammari et al. (2022) and Asiaei et al. (2022) utilized RBV to investigate the impact of CSR on performance, and Barakat et al. (2022) used RBV to test the impact of information sharing on value creation; however, the focus of this study was not on SCCs context. Jain et al. (2022) also utilized RBV to investigate the impact of information and collaboration facilitation on CSR. ERBV was used by Popli et al. (2017) investigating the impact of networking on organisational performance. Bag et al. (2020a) investigated the impact of green practices on organisational performance using ST, while Ni and Sun (2019) used ERBV to investigate the impact of sustainability on organisational performance. Mousavi et al. (2018) and Oliveira-Dias et al. (2022) investigated the impact of DCs on sustainability using DC theory, while Mota et al. (2022) utilized DC theory to investigate the impact of resilience on performance.

Therefore, a holistic approach is needed to understand the impacts of DCs on sustainability, and of sustainability on financial and non-financial performance measures of an organisation (Das et al., 2019), particularly in the context of SCCs (Das et al., 2019, Golicic et al., 2017). This is being approached with developing the theoretical framework presented in section 5.

4. Research methodology

This research focuses on constructing a framework that combines three theoretical lenses: systems theory, extended resource-based view and dynamic capabilities theory and brings empirical evidence from existing literature. In order to explain and establish the relationships between SCCDCs, DCs, three dimensions of sustainability and financial and non-financial performance, this framework introduces a novel approach where DCs is imbedded into SCCs to create a sustainable SCC. This can help in the prediction and explanation of the relationships among SCCDCs, DCs, sustainability and organisational performance. This can be done by linking DC to SCCDCs in order to be able to enhance sustainability and eventually enhance
organisational performance. Based on the aim of this research, the model approach for the conceptual views proposed by Jaakkola (2020) will be adapted. The framework will illustrate how better outcomes (enhanced sustainability and performance) can be achieved through specific antecedents (SCCDCs and DCs) with a logical causal linkages and mechanisms supported by empirical evidence and theoretical lenses (Bouzzine and Lueg, 2022). This will help in developing propositions that introduce new combinations of the relationships between these constructs in order to be empirically investigated in the future (Jaakkola, 2020). In addition, it will help in bridging the gap between the combination of the theoretical lenses ST, DC theory and ERBV and the combination of the research constructs SCCDCs, DCs, sustainability and organisational performance (Cornelissen, 2017).

5. Integrated framework

A corresponding conceptual framework is formulated on the basis of the previous discussion and is presented in Figure 2.

Figure 2: Research model– sustainable clusters– “The role of supply chain cluster design characteristics in sustaining organisational performance through dynamic capabilities”
Supply chains are considered to be systems with subsystems (supply chain members) that can collaborate to enhance their performance and that of the overall system (Flynn et al., 2010, Michalski et al., 2018). The collaboration established among subsystems also helps them overcome market risks (Peck, 2005). Following the same logic, this research posits that SCCs represent systems in which the close proximity and connectedness among their members are the pillars that hold the systems together and facilitate collaboration and sharing information and resources to mitigate risk and enhance sustainability and organisational performance.

Based on previous studies presented, in addition to the benefits of SCCDCs mentioned in the previous sections, this research, arguably, presents SCCDCs as tools to maintain competitive advantages (Kraaijenbrink et al., 2010) by increasing sustainability, thus improving organisational performance (Bag et al., 2019, Xi et al., 2014). This notion is supported by ERBV because organisations can acquire the resources needed to enhance sustainability and, eventually, organisational performance by being engaged in links outside their boundaries (Xi et al., 2014). In other words, ERBV argues that organisational competitive advantage can be achieved when organisations acquire resources from the external environment (Son et al., 2014). In addition, empirical evidence suggests that organisations can perform better than their peers (Albuquerque et al., 2020) if they were focusing on sustainability, as it increases customer loyalty, makes their products less price elastic and allows organisations to maintain their revenue growth (Albuquerque et al., 2019). It can be argued that enhancing sustainability can lead to a better performance outcome (Albuquerque et al., 2020) as sustainability gives organisations a competitive edge through enhancing customer loyalty and trust (Albuquerque et al., 2019, Albuquerque et al., 2020).

Drawing on ST and ERBV, in addition to the fact that supply chains contain the resources needed to sustain a competitive advantage (Ketchen and Hult, 2007), a unique bundle of resources can arguably be located on the SCC level. This argument is supported by the
advantages that SCCs provide to organisations (Mitchell et al., 2010, Grimstad and Burgess, 2014). However, because organisational environments are dynamic (Eisenhardt and Martin, 2000, Bag et al., 2020a), resources might become obsolete over time (Teece, 2007, Kraaijenbrink et al., 2010). Therefore, organisations’ reliance only on available resources will not be enough to maintain a competitive advantage (Kraaijenbrink et al., 2010) because they need to develop their assets by developing DCs to manage a dynamic business environment (Teece, 2007, Kraaijenbrink et al., 2010). This concept introduces DC theory (Teece et al., 1997, Teece, 2007) to the integrated framework, given that this research proposes two DCs: resilience (Geng et al., 2013a) and AC (Riikkinen et al., 2017). Organisations can use these to manage a dynamic business environment and eventually sustain their competitive advantages (Bag et al., 2019, Xi et al., 2014, Teece, 2007) by increasing organisational performance (Bag et al., 2019, Xi et al., 2014). Therefore, the DC theory was proposed to help organisations maintain a competitive advantage in a dynamic business environment (Teece et al., 1997, Teece, 2007).

This framework can help establish sustainable clusters by focusing on sustainability because it proposes that an SCC can be considered to be a system with subsystems (clusters members) that can form alliances by being interconnected in the same geographical location (ST (Rigby et al., 2000)). The formation of an SCC can help organisations acquire a unique bundle of resources to enhance their sustainability (ERBV (Mathews, 2003)). This collaboration and availability of resources can help organisations eventually achieve desirable performance outcomes by enhancing sustainability (ST (Rigby et al., 2000) and ERBV (Mathews, 2003)). However, to maintain sustainability development in a constantly changing environment, organisations need to protect and develop resources by developing DCs (DC theory (Teece et al., 1997)).
The main focus of this research is to propose a conceptual framework derived by operationalising and measuring general concepts from the theories mentioned above through the specific constructs of SCCDCs, DCs, sustainability and organisational performance. The following section illustrates additional details on the relationships among the research constructs.

6. Research Model and Propositions

This section discusses the proposed relationships illustrated in the conceptual framework (Figure 2). This section also formulates four main propositions (see Figure 3) on the impact of SCCDCs on AC and resilience, the impact of AC and resilience on sustainability, the impact of sustainability on financial and operational performance and the mediating role of AC and resilience between SCCDCs and sustainability.

![Figure 3: Research propositions](image)

6.1 SCCDCs and DCs

Drawing on systems theory, organisations inside a system need to be interconnected to overcome the dynamic business environment (Tipu et al., 2019). The integration and coordination of resources among a system’s members are essential as they enhance organisations’ capabilities (Fantazy et al., 2016). In this sense, through introducing DC theory
(Teece et al., 1997), organisations will be able to use this advantage until they build DCs in order to renew and protect their resources to cope with the disruptions in the market (Teece, 2007, Helfat et al., 2007). Based on this argument, this research posits SCC as a system where its subsystems (cluster’s members) can use the established alliances and availability of resources to cope with the business environment through building DCs.

Because SCCDCs can help organisations acquire resources and collaborate, forming clusters can arguably help organisations build sustainability (Mitchell et al., 2010, Grimstad and Burgess, 2014). Geographical concentration and networked collaboration allow members to focus on specialisation because they can rely on each other through cooperation and facilitate the optimal flow of information and skilled labor (Tolossa et al., 2013), which builds trust and allows them to be more flexible in adapting to dramatic changes in the dynamic business environment (Geng et al., 2013a). The close proximity also allows for an easy access to resources and information (Tolossa et al., 2013), including skilled employees and reliable suppliers, thus increasing their productivity (Patti, 2006).

Networked collaboration creates synergies by allowing members to use their collective skills and resources in harmony (Porter, 1998), enhancing the ability to face risks and limiting the impact of shocks (Chowdhury and Quaddus, 2017). A high collaboration level among organisations inside SCC does not only allow for an easier access for information (Tolossa et al., 2013), but it also reduces the cost of obtaining information and limits the disorientation of information (Wang and Sun, 2020). Clusters also give their members access to public institutions (Patti, 2006), which provide managerial knowledge, training and specialized training (Porter, 1998). Research institutions and universities provide knowledge that can uniquely help organisations to quickly update their products and services to cope with the volatile demand change (Ind et al., 2017).
Trust, collaboration, the availability of skilled labor, knowledge, training and support from the government, research institutions and industry associations enhance organisations’ ability to adapt to changes and seize opportunities, in turn helping organisations facilitate AC (Elbaz et al., 2018), build resilience (Golicic et al., 2017) and eventually enhance organisational performance (Lin, 2018). SCCDCs provide organisations with increased accessibility to resources (Niu, 2010) and facilitation of vertical and horizontal integration among clusters’ members (Wang and Xiao, 2016a), which enhances their resilience (Ye et al., 2020). In addition, it promotes knowledge creation and sharing (Hurmelinna-Laukkanen, 2012, Mitchell et al., 2010, Grimstad and Burgess, 2014, Niu, 2010), which eventually leads to a better absorptive capacity (Naqshbandi, 2016).

Recent empirical studies utilized DC theory and ST to explain the benefits of networking and collaboration (sharing of resources and information). For example Ye et al. (2020) used DC theory to explain how networking can lead to a better allocation of resources and eventually performance in a supply chain cluster context. Tipu et al. (2019) also focused on networking between supply chain members and its impact on performance through utilizing ST. Wang and Sun (2020) also utilize ST to explain how collaboration can lead to an enhanced AC and eventually better performance. Ye et al. (2020), Wang and Sun (2020) and Tipu et al. (2019) explained that collaboration leads to exchange of information and resources and allow organisations to acquire external knowledge, which enhances speed of adaptation to market changes and eventually performance. Through extending previous research work and its conceptualizations of ST and DC theory along with the benefits of SCCDCs discussed above, it can be argued that combining systems theory and DC theory can support the notion that SCCDCs can facilitate the development of DC (Golicic et al., 2017). Organisations inside a system can enhance their capabilities through integrating their resources (Fantazy et al., 2016); therefore, the shared infrastructure and resources among SCC members (Tolossa et al., 2013,
Lis and Rozkwitalska, 2020, Lei and Huang, 2014) allow organisations to have access to resources that can be used to cope with the dynamic business environment (Lei and Huang, 2014) and hence develop their DCs (Golicic et al., 2017).

P1. When geographically concentrated organisations maintain horizontal and vertical collaboration and receive support from organisations, such as governmental institutions, universities and research institutions, and trade/industry associations, they can thrive in a dynamic business environment by enhancing their resilience and AC.

6.2 Dynamic capabilities and sustainability

DCs allow organisations to cope with the constantly changing environment through acquiring, reconfiguring, integrating and releasing resources (Vanpoucke et al., 2014). By using and having access to control resources, organisations have a better opportunity to create new resources (Helfat et al., 2007, Vanpoucke et al., 2014), in addition to recombining resources owned by them to enhance their competitiveness (Vanpoucke et al., 2014). DCs allow organisations to acquire knowledge, anticipate market changes and seize opportunities in the market, which helps them in enhancing their sustainability (Song and Choi, 2018). Previous research utilized DC theory to explain how DCs can enhance sustainability. For example, Mousavi et al. (2018) and Oliveira-Dias et al. (2022) used DC theory to explain how DCs can enhance sustainability. While Mota et al. (2022) used the theory to explain how DCs can enhance organisational responsiveness to market changes. In the studies from Mousavi et al. (2018), Oliveira-Dias et al. (2022) and Mota et al. (2022), the main idea was that DCs allow organisations to reconfigure resources and competence; in return, this allows organisations to cope with market changes and enhance sustainability levels, which will eventually give organisations a competitive edge. Therefore, drawing on the results of previous studies and
following the logic of DC theory, organisations can use DCs to create and develop new resources that can help enhance sustainability.

6.2.1 AC and sustainability

To develop sustainability, organisations may need to change some of their business processes (Delmas et al., 2011, Riikkinen et al., 2017). Acquiring external knowledge and being in a position to assess this knowledge form a part of absorptive capacity (Shubham and Murty, 2018, Zahra and George, 2002). Sustainability adaptation needs a high level of absorptive capacity (Riikkinen et al., 2017) in order to exploit sustainability related knowledge and information (Abareshi and Molla, 2013, Haugh and Talwar, 2010). This means that absorptive capacity facilitates the implementation of sustainability practices (Delmas et al., 2011, Kauppi et al., 2013).

Sustainability adaptation requires a high level of AC to exploit sustainability-related knowledge and information. The manner in which organisations search for and acquire knowledge allows them to understand stakeholders’ demands regarding sustainability and customers’ expectations regarding the service and/or product (Riikkinen et al., 2017). Organisations might not own the sustainability-related knowledge needed to enhance sustainability, which pushes organisations to enhance their AC to acquire the missing knowledge to enhance sustainability (Pace, 2016). Sustainability-related information could be new standards, certificates, materials, and environmentally friendly resources (Riikkinen et al., 2017) and new requirements for corporate social responsibility (Boyd et al., 2007). AC is considered to be an antecedent for green practices because it allows information about the product’s life cycle to flow smoothly among supply chain members (Riikkinen et al., 2017). In addition, AC helps organisations collect sustainability-related information from trade/industry associations/and third-party organisations (Boyd et al., 2007).
DC theory and absorptive capacity give organisations the ability to combine acquired information from external sources with existing knowledge effectively (Albort-Morant et al., 2018) and allows them to use this combined knowledge to enhance sustainability and spread it within and across organisations (Upstill-Goddard et al., 2016). Therefore, it can be argued that developing absorptive capacity can enhance sustainability (Lee et al., 2014).

P2.1. Once organisations develop the ability to reconfigure their resources and augment their capabilities to cope with the constantly changing environment through enhancing AC, they will be able to increase the three dimensions of sustainability.

6.2.2 Resilience and sustainability
In order to enhance sustainability and maintain sustainable activities during disruptions, resilience is needed as it allows organisations to proactively cope with market changes (Winnard, 2014). In other words, as any system is vulnerable and unable to maintain long-run sustainability, organisation must focus on building resilience (Anderies et al., 2013). It is important to strategically enhance resilience in order to protect the process, activities and resources that help in increasing sustainable activities during disruptions (Marchese et al., 2018). In this sense, resilience is needed to maintain organisations’ and their supply chains’ sustainability before (Loh Hui et al., 2017), during and after disruptions (Park et al., 2013). This can be achieved through incorporating sustainability practices into resilience capabilities (Winnard et al., 2018). Because organisations struggle to sustain their operations, resilience can allow a solution to adapt to the business environment (Golicic et al., 2017). For example, labor strikes create the inability to fulfill delivery commitments, and organisations become unable to meet their contractual agreements (Blackhurst et al., 2005). Implementing resilience could help organisations keep original production schedules at the lowest cost possible (Tang, 2006), while reducing waste and emissions by establishing strategies, such as a recovery plan and sharing of information and resources (Eshetu et al., 2017). The flexibility that resilience
offers to organisations, such as flexible transportation (Golicic et al., 2010) and flexible sourcing (Stevenson and Spring, 2007), enhances the transportation network quality, which decreases costs, enhances economic sustainability (Golicic et al., 2010) and reduces CO₂ emissions, which increases environmental sustainability (Christopher et al., 2011). Flexibility can enhance organisational ability to reconfigure resources to cope with demand changes with the lowest cost possible (Ullah and Narain (2020). In addition, it eliminates waste, which decreases the negative impact on society and the environment, and improves social conditions (Ruiz-Benitez et al., 2019). All of these benefits of building resilience help organisations achieve their main goal of enhancing sustainability (economic, environmental, and social) (Anderies et al., 2013, Golicic et al., 2017). Based on the empirical evidence illustrated above, in addition to the underlying logic of DC theory, it can be argued that developing resilience can lead to enhanced sustainability (Anderies et al., 2013, Golicic et al., 2017).

P2.2. Once organisations develop the ability to reconfigure their resources and augment their capabilities to cope with the constantly changing environment through enhancing resilience, they will be able to increase the three dimensions of sustainability.

6.3 Relationship between SCCDCs and sustainability through DCs

Because SCCs promote working toward common goals and sharing information through networked collaboration (Hoof, 2014), supporting services (government, universities, and industrial associations) (Grimstad and Burgess, 2014) and geographical concentration (Grimstad and Burgess, 2014, Mitchell et al., 2010), working inside a cluster can arguably help organisations maintain their operations (Grimstad and Burgess, 2014). These characteristics allow for easier access to resources, information (Tolossa et al., 2013, Grimstad and Burgess, 2014) and knowledge generation (Lei and Huang, 2014, Mitchell et al., 2010). Because SCCDCs are also related to DCs (Golicic et al., 2017) as organisations seek to join a SCC to
manage constantly changing market needs (Huang and Xue, 2012), arguably, the creation of SCCs allows organisations to maintain their performance during and after crises (Geng et al., 2013a). Therefore, building DCs through SCCDCs can help organisations develop sustainability (Golicic et al., 2017) and promote sustainability practices, policies and regulations (Grimstad and Burgess, 2014). DCs are essential for sustainability because they help facilitate sustainability practices (Zahra and George, 2002, Riikkinen et al., 2017, Teece, 2007). They are also important in realising the full potential of collaboration (Agostini and Nosella, 2020) in an SCC context (Golicic et al., 2017). AC helps organisations acquire new knowledge and integrate it with existing knowledge (Wang and Sun, 2020). AC can help organisations transform combined knowledge to implement new technologies (Agostini and Nosella, 2020), promote innovation (Huang et al., 2018), (Agostini and Nosella, 2020) and creativity (Fong et al., 2018), through enhancing their business activities (Cozza and Zanfei, 2016) to develop sustainability (Riikkinen et al., 2017). AC does not only enhance knowledge acquisition but it also helps organisations create new useful knowledge (Khan et al., 2020) that promotes sustainable activities (Riikkinen et al., 2017). In other words, in order to strategically implement sustainability (Saenz et al., 2014), AC is needed as it helps organisations implement necessary strategic developments (Khan et al., 2020). Resilience is also related to sustainability as it promotes flexible supply base and contingency planning, which allow organisations to maintain sustainability (Ruiz-Benitez et al., 2019). Resilience helps a system capability retain its full operational capacity after disruptions (Tipi and Elgazzar, 2021). The total cost reduction, transportation flexibility and quick recovery eventually enhance economic as well as social and environmental sustainability (Ruiz-Benitez et al., 2019).

As mentioned earlier, Popli et al. (2017) investigated the impact of networking on organisational performance through utilizing ERBV, where organisations gain access to unique access of resources through networking that can be used to enhance their competitiveness.
While Ye et al. (2020) utilized DC theory to explain how clusters can facilitate resources sharing in order to better allocate resources, which enhance organisations’ ability to cope with the dynamic business environment. Based on the fact that DC theory is presented as an extension for RBV (Teece et al., 1997, Barney, 1991), it can be argued that through ERBV, organisations can acquire resources from the external environment, which can be suppliers, governmental agencies and other entities in the same geographical area or region (Popli et al., 2017). While DCs can allow organisations to reconfigure these acquired resources to cope with market changes and enhance sustainability levels (Oliveira-Dias et al., 2022). In this sense, SCCDCs can give organisations access to resources that enhance their DCs (Golicic et al., 2017). In return, the enhanced DCs can be used to develop sustainability, as AC facilitates acquiring and developing of necessary knowledge (Kim and Park, 2017) in a cluster (Ferras-Hernandez and Nylund, 2019) to enhance sustainability (Sirilertsuwan et al., 2018). In addition, resilience also facilitates networks’ collaboration (Randolph, 2016) to develop sustainability (Park et al., 2013) because without resilience, risk leads to fragile sustainability (Anderies et al., 2013).

P3. Utilizing SCCDCs (geographical concentration, networked collaboration, and supporting services) can help organisations enhance the three dimensions of sustainability by developing DC. Doing so will allow organisations to maintain and increase the degree of sustainability during and after a crisis.

6.4 Sustainability and organisational performance

Reaching high levels of sustainability can be achieved through collaborative efforts, as customers hold organisations responsible for not abiding by sustainable standards, even if the problem originated from the supplier (Paulraj et al., 2017). This means that supply chain members need to help each other and work jointly to achieve high levels of sustainability (Luzzini et al., 2015). Sustainability development through collaborative activities will
eventually lead to better organisational performance (Xi et al., 2014) as they create value to the customers and increase their willingness to pay (Priem et al., 2012). In other words, organisations need to seek alliances to acquire resources outside their boundaries in order to enhance their sustainability (Miemczyk and Luzzini, 2019) and eventually achieve higher organisational performance (Ni and Sun, 2019). This notion is discussed in systems theory and extended resource-based view as systems theory emphasises the integration and collaboration among organisations to enhance their performance (Flynn et al., 2010, Michalski et al., 2018). Regarding extended resource-based view, it can be argued that a higher organisational performance can be achieved when combining acquired external resources with organisational internal resources (Yang et al., 2019). The combination of external resources acquired through collaboration and internal resources can help in enhancing sustainability, which creates value to the customer and eventually leads to higher organisational performance (Ni and Sun, 2019).

The relationship between sustainability and organisational performance in a SCC context is supported through the combination of the theoretical lenses, systems theory (Rigby et al., 2000) and ERBV (Mathews, 2003), especially that these theories were utilized by Ni and Sun (2019) and Bag et al. (2020a) to explain the relationship between sustainability and performance, as the collaboration and availability of resources achieved through clustering can help in increasing organisational performance through enhancing sustainability. The fact that operational performance is related to quality enhancement, efficiency and productivity and financial performance is related to market share, sales and return on investment (Huo et al., 2014), rationalise the positive impact of sustainability on enhancing operational (Reuter et al., 2010) and financial performance (Albuquerque et al., 2020). Economic sustainability focuses on decreasing operational and logistics cost (Agrawal et al., 2016). Environmental sustainability focuses on recycling, waste management and renewable energy (Agrawal et al., 2016). While social sustainability focuses on promoting equality, social justice, customer
safety and employees' benefits and stability (Workforce health and safety) (Agrawal et al., 2016).

In general, sustainability enhances the organisational image (Reuter et al., 2010) because it allows organisations to focus on environmental and social aspects and not only economic aspects (Bag et al., 2019). Such a focus has a positive impact on organisations’ financial performance as they gain investors’ trust and attract more investments (Albuquerque et al., 2019, Albuquerque et al., 2020). In addition, sustainability increases customer loyalty, which secures a steady flow of revenue due to the low price of demand elasticity (Albuquerque et al., 2019). Monitoring operational performance is also important because the overall financial performance measure is not enough, given that it is influenced by other factors (Pettit et al., 2019). Investing in enhancing sustainability also enhances operational performance (Reuter et al., 2010) by focusing on increased productivity with lower costs, energy and resources and a longer product lifespan (Hollos et al., 2012).

P4. Organisations that focus on economic, social and environmental sustainability can have higher levels of financial and operational performance and, thus, be more competitive.

7. Conclusion and future research
This paper introduced a conceptual framework that provides organisations with a guide to establish sustainable clusters through the efficient reliance on local networks and resources to sustain their organisational performance by developing DCs to thrive in a dynamic business environment. The developed framework presents a novel approach that creates the foundation for the abstract ideas combined in ST, ERBV and DC theory by conceptualizing them using research constructs that will help extend their views by combining them in a SCC context. This was discussed in relation with previous work on how these three theories have been implemented. DC theory is an extension of RBV, where DCs protect and reconfigure acquired resources to enhance sustainability (Teece et al., 1997, Barney, 1991). ERBV focuses on
acquiring resources from the external environment (Popli et al., 2017), and this can be facilitated through the infrastructure of resources created in a system (supply chain system) (Flynn et al., 2010, Michalski et al., 2018). Since SCCDCs enhance collaboration and sharing of resources, the framework developed in this study promotes SCC as a system in which its sub-elements (clusters members) can form links and depend on each other to create a pool of resources (ST focuses on collaboration (Cooper et al., 1997)). This pool of resources can be combined with organisations’ internal resources to create a unique bundle of resources required to enhance sustainability, thus leading to improved organisational performance (ERBV (Mishra et al., 2019)). However, as organisations operate in a constantly changing environment, they need to take advantage of the availability of resources to build DCs. These capabilities can help organisations enhance sustainability and increase organisational performance by protecting and developing organisational resources (DC theory (Xi et al., 2014)). Forming alliances and creating a pool of shared resources will allow organisations to combine external and internal resources to create DCs and extend these capabilities across their boundaries (Huo et al., 2014, Yu and Huo, 2019). The results of this research make a number of theoretical and practical contributions.

7.1 Theoretical implications

Empirical studies used ST, ERBV and DC theory (e.g., Bag et al., 2019, Chen et al., 2019, Hong et al., 2018, Bag et al., 2020) but did not combine them. Combining these theories, particularly in an SCC context, can potentially extend their understanding and applications by applying them in an SCC context. This research demonstrates that organisations can take advantage of being in an SCC system and use resource availability to enhance organisational performance by building DCs and developing these resources to maintain the desirable sustainability. This conceptual study also addresses the lack of theoretical understanding of how being in a cluster (i.e. SCCDCs) may affect the cluster members’ DCs (Martinez-Sanchez
et al., 2019, Taslimi et al., 2020). The proposed conceptual framework prompts industry practitioners and policy makers to the idea that an effective design of SCC with appropriate geographical concentration, networked collaboration and necessary supporting services can help cluster members to enhance their DCs, thus improving organisational performance.

Another contribution of this conceptual study is to advance the knowledge of sustainability dimensions and how economic, social and environmental sustainability can be enhanced through DCs (Ruiz-Benitez, López, & Real, 2019; Touboulic & Walker, 2015). In addition, it illustrates how the three sustainability dimensions can positively affect organisational performances (Das, Rangarajan, & Dutta, 2019). Previous studies have a predominant focus on environmental sustainability (Walton et al., 2020), a gap has been identified that highlights a need for further comprehension of the underlining dimensions of sustainability (i.e. economic, social and environmental) and how they link with DCs (Ruiz-Benitez et al., 2019, Touboulic and Walker, 2015) and organisational performance (Paulraj et al., 2017, Das et al., 2019). This also contributes to the debate in literature regarding the relationship between sustainability and organisational performance in supply chain management literature (Paulraj et al., 2017).

This study highlights that by nurturing DCs (resilience and absorptive capability), not only the economic sustainability of a firm but also the environmental and social sustainability can be enhanced. Also, all the three dimensions of sustainability could have an influence on organisational performance in a SCC context, especially that further attention is needed to investigate the impact of DCs on sustainability (Pettit et al., 2019, Golicic et al., 2017, Aboelmaged and Hashem, 2019) and eventually organisational performance (Pettit et al., 2019), in addition to the impact of the three dimensions of sustainability on organisational performance (Croom et al., 2018, Das et al., 2019, Ni and Sun, 2019). Testing these relationships, especially in an SCC context, reveals the answer to the call from Das et al.
(2019), Golicic et al. (2017), and Lis and Rozkwitalska (2020) regarding investigating the impact of clustering on AC and resilience. Furthermore, such a test contributes to the link between SCCDCs and DCs because it will pave the way to investigating their relationships. Empirically testing these relations will theoretically contribute to the literature gap highlighted by (Lis and Rozkwitalska, 2020, Golicic et al., 2017), especially that there is relatively less known on how being in a cluster (i.e. SCCDCs) may affect the cluster members’ DCs (Martinez-Sanchez et al., 2019, Taslimi et al., 2020).

7.2 Practical implications

The findings of this research are particularly important for managers who operate in a SCC to nurture not just the economic sustainability of a firm, but also social and economic sustainability under market disruptions. This will give organizations a competitive edge and eventually increase their performance especially in the post COVID-19 era. During this period some governments suspended sustainability related laws and regulations to achieve a quick economic recovery (Sarkis, 2021). In this sense, the conceptual framework and its propositions can assist policy makers in the improvement of SCC design and management, with considerations of DCs and sustainability.

The developed framework can help governments develop clusters continuously (Xin and Li-ying, 2013, Dana et al., 2013, Yuan et al., 2021) as DCs can help organisations overcome the trade-off between connectedness and adaptability (Geng et al., 2013b, Simmie and Martin, 2010), which will eventually help in achieving SDGs (UN, 2018b) and enhance economic growth (Monteiro, 2016, Dong, 2011, Panyathanakun et al., 2013). The framework shows the importance of developing DCs for SCC members to enhance sustainability, in addition, it incentives them through linking it to their performance (Esfahbodi et al., 2016). Therefore, the framework provides practitioners and decision makers with a holistic approach to enhance sustainability by highlighting the benefits of enhancing sustainability to
performance. In addition, it illustrates how stakeholders’ collaboration and support helps in job
creation, improving community’s quality of life (Panyathanakun et al., 2013) and enhances
value creation through innovation (Mikhaylov, 2013, Lu and Shin, 2018). Especially, that
cluster activities raise environmental issues and harm the surrounding communities (UNIDO,
2016b), in addition, stakeholders are pressuring organizations to focus and sustainability issues
(Munir et al., 2020). This means that enhancing sustainability will give organizations a
competitive edge (U-Dominic et al., 2021), even under a volatile market changes as
organizations that focus on sustainability issues gain customer and investors trust and loyalty
(Albuquerque et al., 2019, Albuquerque et al., 2020).

Notably, the developed framework in this research has significant practical
implications, as it helps managers increase their organizations’ efficiency, sustainability and
global competitiveness in a dynamic business environment through identifying areas that need
specific improvement. Especially that collaboration enhances enhancement of technology and
timely and efficient flow of information (Wang and Sun, 2020). This can be achieved through
promoting local networking, and the use of local knowledge, materials and resources (Porter,
1998), which can help organizations overcome disruptions caused by events such as COVID-
19 (Cappelli and Cini, 2020). The quick spread of COVID-19 required trade restrictions which
caused fluctuations in demand and supply and global supply chain disruptions (Cappelli and
Cini, 2020). Arguably this emphasizes the importance of SCCDCs to improve collaboration
between organizations and the local government to establish a sustainable clusters (Hong and
Gasparatos, 2020).

7.3 Further Research
The proposed framework needs to be investigated in developing and developed countries, in
addition to different regions and industries (Lis and Rozkwitalska, 2020, Golicic et al., 2017)
because previous studies focused on wine and high-tech industries. Future research can use
simulation/ different scenarios to test the propositions. Testing this framework can also rebrand SCCs as tools to enhance organisations’ sustainability by increasing their adaptability in a dynamic business environment. In addition, this framework is expected to help develop the theories (ST, ERBV, and DC theory) by testing their applicability during disruptions, such as COVID-19, in an SCC context.

References


