Empowering Clusters for Sustainable Supply Chain in Egypt

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The high frequency of market shocks pushes organisations to focus on cost reduction and financial gains at the expense of social and environmental issues, which leads to health and safety issues. Especially in supply chain clusters (SCCs), the concentration of industrial and logistics activities, such as transportation, raises environmental issues and harms the surrounding communities.

resilience absorptive capacity sustainability supply chain cluster Egyptian market

1. Introduction

The high frequency of market shocks pushes organisations to focus on cost reduction and financial gains at the expense of social and environmental issues, which leads to health and safety issues [1]. Especially in supply chain clusters (SCCs), the concentration of industrial and logistics activities, such as transportation, raises environmental issues and harms the surrounding communities [2]. SCCs help organisations recover from disruptions and seek financial gains collaboratively, as they can enhance the interconnectivity of geographically concentrated businesses, which creates mutual trust and eventually enhances their competitive advantage [3]. However, the enhanced awareness of sustainability from stakeholders is pushing organisations to take action towards the implementation of environmental and social activities [4]. To form a SCC, organisations must be geographically concentrated (situated locally, within and around the city) and interrelated and have a high level of cooperation; the geographical concentration and networked collaboration facilitate strong information and resource sharing and enhance trust. In addition, SCC also contains supporting entities (e.g., governmental agencies and research institutes) which enhance overall cluster development as they provide training and technical support [3]. These three characteristics are considered to be supply chain cluster design characteristics (SCCDCs) [3][5].

Supply chains as a system allow organisations to create a pool of shared resources and information and collaborate to enhance the overall performance of the supply chain by enhancing their own organisations' performance [6]. Systems theory focuses on how organisations in a system (supply chains [7] or SCCs [8]) can work together to cope with market changes through sharing information and resources [7]. In this sense, SCCs are considered to be a system where the three characteristics facilitate the creation and development of resources and knowledge and allow organisations to have access to this collective knowledge and resources quickly and easily [8]. In order to gain the full benefits of SCC, the focus has predominantly been placed on dynamic capabilities (DCs) on economic sustainability regarding how DCs can help organisations adapt to market changes [9], especially since connectedness can lead to cascading failure, which stresses the importance of DCs [10]. However, there are

relatively fewer research efforts carried out to assess their impact on social and environmental sustainability in the SCC context. DCs, such as resilience and absorptive capacity (AC), can help organisations enhance their sustainability through efficient and quick responses to market changes [11][12]. Resilience focuses on helping organisations survive and thrive through building capabilities that can help them recover quickly and efficiently from disasters that negatively affect their performance [13]. In addition, it allows organisations to keep their desired level of performance during disruptions [14][15][16]. AC, on the other hand, enhances organisations' ability to utilise acquired knowledge to promote their adaptability [17]. This can be achieved through improving the efficiency of business processes, using resources efficiently and promoting innovation [18]. These two DCs are particularly important during disruptions in helping organisations to reduce risk and safeguard competitive advantage, but limited information is known regarding their roles in affecting social and environmental sustainability performance (e.g., efficient control of waste and cost [19] and enhancing employees' work conditions [20]). Focusing on the three aspects of sustainability (environmental, social and economic) [19] will help SCCs organisations with a holistic approach [8] and incentives through promoting economic sustainability, along with environmental and social sustainability [21].

2. Relationship between SCCDCs and DCs

SCCDCs facilitate strong information and resource sharing, which enhances trust among supply chain cluster members. In addition, SCC also contains supporting entities (e.g., governmental agencies and research institutes) that enhance overall cluster development as they provide training and technical support [3]. This supports organisations' ability to adapt to changes and make use of opportunities [22][23][24]. In turn, it facilitates their development of absorptive capacity [12] and resilience [20][25], especially since collaboration and governance among organisations support supply chain dynamic capabilities [26].

Since organisations' capabilities can be enhanced through the integration of resources among the system's members [27], and the shared infrastructure provided through clustering allows organisations to adapt quickly to market shocks [28], it can be argued that SCCDCs can be used to enhance resilience, and especially that strong partnerships can increase resilience [29]. Organisations in a SCC can exploit external knowledge by hiring skilled labour and acquiring information and knowledge from the pool created by SCCDC [30], which enhances creativity and innovation [31][32]. Since AC can be enhanced through the facilitation of sharing knowledge and information [33] and access to new skills and resources [34], it can be argued that SCCDCs can pave the way for organisations to develop their AC. In return, AC helps in enhancing the organisational ability to combine acquired information with existing knowledge in order to create new useful knowledge [34][35].

3. Relationship between DCs and Sustainability

Market shocks, which are frequently occurring, keep organisations focus away from enhancing sustainability [1]. Improving sustainability will not just benefit society or the surrounding environment, but it will also benefit the organisations as it increases all stakeholders' satisfaction [4]. Organisations can use DCs to enhance sustainability

performance [12], as it allows organisations to reorganise and modify their processes and resources related to sustainability performance to meet the constantly changing market requirements [1].

In order to build resilience, organisations are required to maintain strong ties with their supply chain members and create teams with the key objective of creating contingency plans and reconfiguring resources to face dynamic changes in the market [36]. This helps in reducing the negative impact on society and enhances organisational profitability, as it facilitates waste reduction, increases employment stability and secures a steady source of revenue [19]. Drawing on DC theory and the above discussion, it can be argued that building resilience thus helps organisations to achieve greater sustainability.

AC facilitates boundary spanning and allows organisations to acquire knowledge and process it to their advantage [37]; this is particularly important as needed knowledge (knowledge-related sustainability [38]) might not be owned by organisations [12]. Based on DC theory logic and the important role of AC in applying sustainability practices, it can be argued that AC can facilitate the implementation of sustainable practices.

4. Relationship between SCCDCs and Sustainability through DCs

Eco-friendly industries are growing in developing as well as developed countries; however, Middle Eastern and North African countries are still in their early stages [2]. To further develop sustainability activities, it is essential that organisations inside a cluster work together, which will remove stakeholders' pressure and sustain their competitive advantage [4]. Since organisations need to frequently enhance, expand and protect their resources through DCs [9], as they are operating in a constantly changing environment [38], it can be argued that building DCs through clustering can help organisations enhance sustainability, especially SCCDCs allow organisations to maintain their operations [28]. On the other hand, AC as a dynamic capability facilitates the acquisition of sustainability-related knowledge [11] and maximise collaboration benefits [39]. In addition, resilience as a dynamic capability allows organisations to maintain high levels of sustainability in a constantly changing environment [12][40]. Based on the above and the underlying logic of ERBV, a unique bundle of resources is required to be collected in order to be able to gain a competitive edge.

Since collaborative efforts of all stakeholders facilitate sustainability development [4][41], it can be argued that SCCDCs facilitate sustainability improvements, especially since they help in cost reduction and enhancing productivity with the lowest waste [42] and cost possible through cost and resource sharing [43]. However, internal capabilities need to be developed so that organisations will be able to acquire and use external resources to create a competitive edge. In this sense, SCCDCs can be used by organisations (subsystems) to collaborate and benefit from the knowledge and resources located in SCC (system), in an effort to enhance their capabilities [27]. In other words, it can be argued that organisations' DCs can be enhanced through collaboration and integration in a SCC. Then, using their internal enhanced capabilities, resilience and AC, organisations can develop their resources by using available external knowledge and resources to enhance their sustainability levels.

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