Logistics Effectiveness Through Systems Thinking

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ABSTRACT

Various emerging concepts influence logistics management as scholars are developing the body of knowledge. So also, the progress and the multidisciplinary aspect of knowledge that has been influencing logistics management has changed the way scholars and researchers think about logistics as an arena of application. This, in turn, influences the logistics practices. There has been an incredible shift in organizations towards an inter-disciplinary approach where all functions of an organization interact towards the achievement of organizational objectives. This shift, therefore, calls for logistics to adapt to the emerging concepts in order to contribute meaningfully to the overall goals of the organizations. Hence, adopting a grounded theory approach with in-depth literature review this article endeavors to discuss the application of systems thinking the approach to logistics management.

KEYWORDS

Approach, Application, Efficacy, Underlying Principle, Understanding

INTRODUCTION

Systems thinking has become a buzzword among scholars and researchers as an appropriate approach applicable to a varied range of complex situations and problems that previously had no obvious solutions (Meadows, 2008). Primarily used to solve complex engineering problems, the systems thinking approach has its foundations in the field of systems dynamics founded by Forrester (1961). The approach targets the system as a whole rather than the traditionalist thinking of targeting the individual elements, which make up the system. Systems thinking focus on the interactions of the elements making up the system to come up with patterns of interaction and the presentation is in the form of cause-effect diagrams. These Multiple Cause Diagrams help and are in use to analyse complex situations through causal relationships, observation of behaviours and identification of root causes to enable adoption of optimal corrective action (Anderson & Johnson, 1997).

According to La Londe (1994), the discipline of logistics finds its route in the military from 1950s when the concept was adopted to move military hardware and supplies to and from battlefront in support of war effort. The discipline evolved over the years to become a complex web of activities, which established itself both within and outside organisations. With the advent of globalisation and worldwide supply chains, the logistics operations became even more complex than ever (Christopher, 2005) did, leaving more questions than answers on the issue of problem solving in logistics management across the whole spectrum of the discipline. Tackling logistics problems in a piecemeal manner has not helped the situation hence there is a need for systems thinking approach. Adopting an exploratory approach within depth literature review, the study, demonstrates the high potential of systems thinking approach to solving logistics problems by use of logistics-based cause-effect
diagrams. Though few of researchers have treaded in this area of study, researches on application of systems thinking in logistics management is still scare though much needed. Hence, this study is timely as the study endorses the theoretical prominence gaining for systems thinking approach in logistics management and on how to translate into practice at workplaces by way of a deliberate program to disseminate the tenets and applicability of the concept to those already in the field.

LITERATURE REVIEW

Holman et al (2018) posits that decision-making in logistics practices covers a wide range of spectrum, from decisions of strategic nature that gives direction to the overall logistics function, to making decisions at operational levels. Further, economic decision-making is essential when trying to get the biggest bang for the buck (Galli, 2019) and the process of systems thinking maximizes benefits and, at the same time, minimize costs. In the realm of strategic decisions, an example could be localisation of facilities or alliances with third party service operators. On the other hand, an example of operational nature could be batch sizing as a way of matching inbound inventories with the available storage space in the warehouse. Such decisions are all through the focal lens of the management of logistics practices. The actual actions in logistics management practices are the execution of such decisions, and involves any other physical and non-physical tasks that are necessary for the inbound flow of materials from outside (input), through the organisation (process) to outbound flow of finished or semi-finished products (output) (New & Payne, 1995). All such actions are seen as part of, or at least relevant to, the management of logistics practices. According to Holman et al (2018), advancement of logistics management into new areas and contemporary thinking leads to the identification of solutions to some of the concerns that have been nagging the discipline since its inception in the 1950s (La Londe, 1994). This study will attempt to discuss how systems thinking can be applied to logistics management as a way of seeking appropriate interventions to the recurrent challenges facing the discipline. The argument advanced in this study will be grounded on systems thinking as it is informed by the systems theory hence an in-depth discussion of this theory will be undertaken to unpack it. The area of application of systems thinking to logistics management is still a green area since the body of knowledge developed so far is still scanty hence, it will be the focal point of this study.

This study will also demonstrate the complexity nature of logistics management as various subsystems interact with each other within the organisation as well as the surrounding environment (Christopher, 2005). Coupled with the internal and environmental interactions, the complexity of logistics management goes further to interact with external actors outside the organisation such as local and international suppliers, partners and consultants. Thus, in simplicity, all these reasons are the complexity of the system surrounding the logistics problems, which is not considered at the beginning (Nasution et al., 2018). Hence, systems thinking approach becomes critical for solving problem in the complex system.

With the advent of globalisation, external actors tend to stretch around the globe making the equation even more complex (Holman et al., 2018). Given the increasingly complexity nature of logistics management, it is prudent to briefly discuss complexity theory as yet another theory underpinning the argument advancing the application of systems thinking to logistics.

Senge (1990) defines systems thinking as a discipline for seeing wholes and a framework, for seeing interrelationships rather than things, for seeing patterns of change rather than static snapshots. Systems thinking can be understood as “people’s capacity to examine a problem in the full setting of the interconnecting elements” (Hosley et al., 1994). It is a discipline for seeing the “structures” that underlie complex situations, and for discerning high from low leverage change. Ultimately, it simplifies life by helping us to see the deeper patterns lying beneath the events and the details (Senge, 1990). It also enables understanding of system behaviour, which is not a function of parts but of how different parts interact (Kofman & Senge, 1993). Appelbaum and Goransson (1997) state that
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