Chapter 4
Studying the Adoption of Blockchain Technology in the Manufacturing Firms:
A Case Study–Based Approach

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ABSTRACT

This chapter studies blockchain technology logistics and supply chain adoption in four manufacturing firms. Semi-structured interviews are conducted, and the results are analyzed using case study methods. Four manufacturing firms are selected for the study. First firms deal with consumer electronics manufacturing, second firms deal with auto components manufacturing, third firms deal with paint manufacturing, and fourth firms deal with consumer electronics, manufacturing, wearables manufacturing. The case study is analysed using cross-case analysis and withing case analysis.

INTRODUCTION

Blockchain technology (BCT), which has been around since bitcoins in 2009, has matured to the point where it is suitable for a wide range of applications. In the current literature, BCT is frequently referred

to as a disruptive technology and an innovation capable of disrupting business processes, abruptly postponing opportunities for action in companies, and radically changing business models (Pavithran et al., 2020). With that in mind, BCT, a decentralized record that works with exchanges of cryptographed information in blocks, has provoked scholastic and business curiosity because of its capacity to confirm, review, and ensure communicated information and data (Bamakan et al., 2020; Gokalp et al., 2019).

BCT has excellent implementation potential in supply chain (SC) operations management because it can work with complex communications among network partners and address the issue of information irregularities (Shin, 2019). As indicated by reports, roughly 62% of SC leaders have utilized BCT, and the normal business esteem added by this Industry 4.0 constituent innovation will surpass US$3.1 trillion by 2030 (Wamba & Queiroz, 2020). The BCT is a distributed system that maintains a consistent, unchanging, and chronological chain of transactions between network participants (Mukherjee et al., 2022a). Due to the shared organization of the BCT, there are no mediators between the players; accordingly, makers or providers in a coordination's chain can manage their clients (Coita et al., 2019; Grover et al., 2019). Trust is a fundamental part of business connections among outsiders, and trust is an innate part of the BCT agreement component (Hijazi et al., 2019; S. Yadav & Singh, 2020).

Disintermediation, or the removal of intermediaries, can achieve SC management objectives such as cost, quality, speed, reliability, risk reduction, sustainability, and flexibility (Makhdoom et al., 2019; Sunny et al., 2020; Yusof et al., 2018). In any case, it is muddled what impact BCT will have on coordination's chain jobs and errands and which go-between charges BCT will cause (Pal et al., 2021a). Players in a coordination's chain should battle with new players and capacities and the deficiency of long-haul colleagues. Maintaining a functional SC necessitates comprehension and transparency regarding the shifting roles and processes caused by BCT (Beck et al., 2017; Macrinici et al., 2018; Marsal-Llacuna, 2018). To achieve this, we led an audit of the writing to record and dissect the overall errands of a go-between (Longo et al., 2019; Sheel & Nath, 2019).

Manufacturing has always been thought of as a tradition-bound industry. The Factory of the Future, however, is set to look very different as technology such as BCT, AI, and machine learning gain traction (Fosso Wamba et al., 2020; Kamble et al., 2019; Latif et al., 2021; Wong et al., 2020). As BCT develops, makers will actually want to defeat a portion of the hindrances to huge scope arrangement of other cutting edge advancements and creative plans of action (Cole et al., 2019; Vafadarnikjoo et al., 2021). Subsequently, more proficient industrial facility tasks will arise, requiring information sharing and coordinated effort across complex organizations of organizations and machines. This will be the new business standard (Chen et al., 2020; Dolgui et al., 2020; Dubey et al., 2020).

LITERATURE REVIEW

Blockchain

BCT is a disseminated, unchanging record that improves on the recording of exchanges and the following of resources in a business organization. An unmistakable resource (like a house, vehicle, money, or land) can likewise be theoretical (licensed innovation, licenses, copyrights, marking). Basically, anything of significant worth can be followed and exchanged on a BCT organization, bringing down hazard and bringing down costs for all gatherings included. A BCT is an assortment of information coordinated into individual squares put away on the entirety of clients' PCs (Bosu et al., 2019; Ikeda & Hamid, 2018;

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