Industry 4.0 Adoption, Control Mechanism and Sustainable Performance of Healthcare Supply Chains under Disruptive Impact

Authors : Edward Nartey

Abstract : Although the boundaries of sustainable performance and growth in the field of service supply chains (SCs) have been broadened by scholars in recent years, research on the impact and promises of Industry 4.0 Destructive Technologies (IDTs) on sustainability performance under disruptive events is still scarce. To mitigate disruptions in the SC and improve efficiency by identifying areas for cost savings, organizations have resorted to investments in digitalization, automation, and control mechanisms in recent years. However, little is known about the sustainability implications for IDT adoption and controls in service SCs, especially during disruptive events. To investigate this paradox, survey data were sought from 223 public health managers across Ghana and analyzed via covariance-based structural equations modelling. The results showed that both formal and informal control have a positive and significant relationship with IDT adoption. In addition, formal control has a significant and positive relationship with environmental and economic sustainability but an insignificant relationship with social sustainability. Furthermore, informal control positively impacts economic performance but has an insignificant relationship with social and environmental sustainability. While the findings highlight the prevalence of the IDTs being initiated by Ghanaian public health institutions (PHIs), this study concludes that the installed control systems in these organizations are inadequate for promoting sustainable SC behaviors under destructive events. Thus, in crisis situations, PHIs need to redesign their control systems to facilitate IDT integration towards sustainability issues in SCs.

Keywords : industry 4.0 destructive technologies, formal control, informal control, sustainable supply chain performance, public health organizations
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