

## Chapter 9

# Sustainability and Green Operations Management: Concept, Theory, and Practice

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### ABSTRACT

*For over four decades now there has been global concerns emerging from environmental considerations. Sustainability was introduced subsequently as a concept to reconcile these environmental dynamics with other ‘pillars’ of sustainable development (social and economic). These global concerns of the environment indicate the importance of green operations management towards optimal utilisation of organisational resources and sustainable management of the entirety of the systems. To this end, this chapter is aimed at providing a review and discussions on relevant historical literature on sustainability and green operations management.*

### INTRODUCTION

In recent discourse with reference to development, sustainability has taken a popular viewpoint (Mensah and Casadevall, 2019) as a result of climate change becoming a reality (Zubair and Khan, 2019). Since 2005, the attentions of the practitioners and researchers in Operations Research (OR) and Operations Management (OM) have been drawn to the concept of sustainability (Gunasekaran, Irani and Papadopoulos, 2013), green operations management (Ren, Hu, Dong, Sun, Chen, Y. and Chen, Z., 2019) and the concerns about the environment towards the improvement of workplace commitment (Pampanelli,

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Found and Bernardes, 2015). Researchers in operations management and operational research have, in recent times, been focusing on green operations management (Gunasekaran and Irani, 2014). It has since been observed by Kleindorfer, Singhal and Wassenhove, (2005) and White and Lee (2009) to be vital in resolving the challenges of complex sustainability confronting several organisations. In exploring influencing factors of adopting sustainable operating practices, Muthulingam (2009) raises global awareness about the increasing trends of adoption of these practices in several organisations.

The global definition of sustainability by the Brundtland Commission of 1987 is the conventional viewpoint which is described as the development which does not compromise the future generations to satisfy their needs while the needs of the present generation is being met (Awan, 2013; Subramanian, Semenzin, Hristosov, Marcomini and Linkov, 2014). There has been series of driving forces putting pressures on organisations to shift towards ‘sustainable development’.

The current chapter discusses the concept, theory and practice of sustainability and green operations management. This is important as it relevant as it plays important roles among researchers and practitioners of operations management by providing useful measures capable of monitoring the efforts of organisations (Golicic, Boerstler and Ellram, 2010) and also serve as support to business support decision making processes (Ngniatedema, 2014).

There exist numerous research on sustainability and green operations management (Lele, 1991; Fahimnia, Sarkis and Davarzani, 2015; Machado, Mattioda, Costa, Lima and Winroth, 2018). These and several other literatures are critically reviewed in this chapter towards business growth optimum performance of organisations.

## **ENVIRONMENTAL ISSUES IN OPERATIONS MANAGEMENT**

Walker, Seuring, Sarkis and Klassen (2014) argued that environmental issues have been of growing concerns within the last three decades due to enormous number of changes in business activities and the society at large, leading to global interests in green manufacturing, reverse logistics, recycling and reductions of waste and carbon-monoxide (CO<sub>2</sub>) emissions. Necessity for environmental issues in Operations Management evolved over a period of time as the results of numerous environmental misdeeds (Pane-Haden, Oyler and Humphreys, 2009). Today, operations managers are faced with environmental issues in their daily managerial decisions as attempts are made in ensuring success in sustainable economic, business ethics and social values (Molia-Azorin, Claver-Cortes, Lopez-Gamero and Tari, (2009).

The environment, according to Purvis, Mao and Robinson (2018), is identified and discussed as one of the three pillars of sustainable development. This is known to include the environmental factors (or ‘goals’). Others are economic and social as depicted in Fig. 1. These are referred to as ‘dimensions’ in Carter and Moir (2012), described as ‘Perspectives’ in Arushanyan, Ekener and Moberg (2012), termed as ‘stool legs’ in Dawe and Ryan (2003) but viewed as ‘Components’ in Zijp, Heijungs and van der Voet, *et al* (2015). These pillars are the triple bottom line of sustainability (Walker, Seuring, Sarkis and Klassen, 2014)

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