Chapter 3 Agriculture Supply Chains

James Kanyepe

https://orcid.org/0000-0002-6871-8831 University of Botswana, Botswana

Tinashe Musasa https://orcid.org/0000-0002-3180-0399 University of Botswana, Botswana

Katlego Mahupa Ketlhaetse https://orcid.org/0009-0007-1013-292X

University of Botswana, Botswana

Brave Zizhou

b https://orcid.org/0000-0003-3775-8213 Loughborough University, UK

ABSTRACT

This chapter explores the emerging issues in the agriculture supply chain. The chapters also aims to address the following objectives: (1) to examine sustainable agriculture practices that can reduce the environmental footprint, (2) to examine the environmental, logistical, and market-related challenges faced by agricultural supply chains, (3) to determine the role of digitalization and data analytics, including IoT applications and precision agriculture, and blockchain technology within agriculture supply chains, (4) to explore the future trends and opportunities in agriculture supply chain. The chapter employed a critical review of academic journals and other articles, with content analysis as the analytical approach. This chapter serves as a comprehensive resource for stakeholders, facilitating informed decision-making and promoting sustainability and resilience.

DOI: 10.4018/979-8-3693-2011-2.ch003

Copyright © 2024, IGI Global. Copying or distributing in print or electronic forms without written permission of IGI Global is prohibited.

INTRODUCTION

Approximately one-third of the world's population faces malnutrition, hunger, micronutrient deficiencies, overweight, and obesity (Negra et al., 2020). They also asserted that global health issues and chronic non-infectious diseases are caused by poor diet. In response to this, agricultural supply chains (ASCs) have become critical in countries that produce agricultural products (Guritno, 2018; Boyabath et al., 2018; 2022). This chapter is a timely response to the Sustainable Development Agenda of the United Nations as outlined in the Sustainable Development Goals (SDGs). For example, SDG 2 focuses on ending hunger, achieving food security, improving nutrition, and promoting sustainable agriculture. Considering this goal, this chapter will educate farmers and other policymakers on how to address challenges in agricultural value chains to ensure food security and promote sustainability.

The SDG 13 aims to address climate change and its effects. This chapter examines how agricultural value chains are influenced by climate change and various policy imperatives that can be suggested to mitigate its effects. Furthermore, SDG 15 seeks to protect and promote the sustainability of terrestrial ecosystems. Therefore, this chapter advocates for the adoption of sustainable agriculture practices (such as organic agriculture) to protect terrestrial ecosystems. Furthermore, this chapter identifies areas for growth and innovation in ASCs.

1. BACKGROUND TO THE STUDY

The history of agriculture (which dates back to the Neolithic period) represents a dynamic story of development change that spans a millennium. The Third Agricultural Revolution (1950-1960s) was acknowledged as a significant turning point in the history of agriculture (Jing et al. 2020). This period was characterized by research and development (RD) and technological advances aimed at increasing agricultural production. Genetic engineering, biotechnology, and information technology have been shown to significantly influence crop yield, quality, and diversity. Additionally, the use of mechanization, irrigation systems, precision agriculture (involving the use of drones, sensor technology and global positioning systems), and genetically modified organisms (GMOs) has increased crop yields (Goodwin & Piggott, 2020; Kedisso et al., 2022; Amari, 2023; Grits, Rostovtsev & Dichensky, 2023; Elashmawy & Uysal, 2023). Despite the impact of these technologies and practices on crop yield, the extent of their adoption remains low in developing countries.

To intensify efforts vital for low carbon development, a global treaty was endorsed during the 2015 COP21 Climate Conference (Rhodes, 2017). The Paris Agreement stresses a reduction in carbon emissions using evolving technologies and capturing 27 more pages are available in the full version of this document, which may be purchased using the "Add to Cart"

button on the publisher's webpage: <u>www.igi-</u> global.com/chapter/agriculture-supply-chains/341688

Related Content

Dimensions of Privacy Concerns amongst Online Buyers in India

Tinu Jainand Prashant Mishra (2015). *International Journal of Online Marketing (pp. 51-64).*

www.irma-international.org/article/dimensions-of-privacy-concerns-amongst-online-buyers-inindia/127071

Analyzing Causality Among the Service Quality, Customer Satisfaction and Behavioral Intention Variables with Respect to E-Shopping: An Empirical Take

Syed Habeeband K Francis Sudhakar (2019). *International Journal of Online Marketing (pp. 38-59).*

www.irma-international.org/article/analyzing-causality-among-the-service-quality-customersatisfaction-and-behavioral-intention-variables-with-respect-to-e-shopping/218180

Comparative Analysis of International Approaches to the Protection of Online Privacy

Peter O'Connor (2005). Contemporary Research in E-Marketing, Volume 2 (pp. 347-366).

www.irma-international.org/chapter/comparative-analysis-international-approachesprotection/7103

Phygitalization of Palliative Care and Its Social Marketing

Kakhaber Djakeli (2025). *Phygital Approaches to Social Marketing (pp. 267-288).* www.irma-international.org/chapter/phygitalization-of-palliative-care-and-its-socialmarketing/358587

Technology-Driven Online Marketing Performance Measurement: Lessons from Affiliate Marketing

David Bowie, Alexandros Paraskevasand Anastasia Mariussen (2014). *International Journal of Online Marketing (pp. 1-16).*

www.irma-international.org/article/technology-driven-online-marketing-performancemeasurement/127058