Chapter 8
Strategic Integration of the Metaverse in Agriculture:
A Sustainable Business Model for Future Farming

S. Seethalakshmi
Saveetha Institute of Medical and Technical Sciences, Chennai, India

Anju Mohan
Saveetha Institute of Medical and Technical Sciences, Chennai, India

U. Marimuthu
Saveetha Institute of Medical and Technical Sciences, Chennai, India

K. S. Alakumarimuthu
https://orcid.org/0009-0007-2869-922X
Government Arts College Melur, Madurai, India

ABSTRACT

The agricultural sector is undergoing a major transition in response to mounting problems like resource constraint, manpower shortage, climate change, and global food demand. In this evolving context the metaverse—an immersive synthesis of virtual reality (VR), augmented reality (AR), artificial intelligence (AI), and the Internet of Things (IoT)—is starting to be a disruptive agent. This paper looks at the strategic integration of metaverse technology with agriculture to create a feasible economic model for farming in the future. By means of sector-specific evaluations, longitudinal data analysis, and graphical representations, the study reveals how

DOI: 10.4018/979-8-3373-2797-6.ch008

Copyright © 2026, IGI Global Scientific Publishing. Copying or distributing in print or electronic forms without written permission of IGI Global Scientific Publishing is prohibited. Use of this chapter to train generative artificial intelligence (AI) technologies is expressly prohibited. The publisher reserves all rights to license its use for generative AI training and machine learning model development.

immersive digital environments foster environmental stewardship, optimal resource utilization, and higher productivity. The paper emphasizes the importance of inclusive digital policy, infrastructure investments, and cooperative innovation to provide equal access to metaverse-driven agricultural advances worldwide.

1. INTRODUCTION

Due to growing concerns throughout the world about food security, climate resilience, labor shortages, and the use of technology, agricultural systems are going through a big change. Because these issues are happening all around the world, this change is happening as a result. The agriculture industry is actively seeking for new ways to do things in order to go beyond the old ways of doing things that have been employed in the past. This is being done to get beyond production models that are no longer useful (Aagaard & Nielsen, 2021). This happened because the agriculture industry is going through digitization at an incredibly fast rate. One of these methods is seen to be one of the most creative and original of these techniques, and it is one of the options being looked at. One strategy that falls under this group is the planned use of the metaverse. The metaverse is a digital world that will be utilized by the next generation. It is made up of extended reality (XR) technology, digital twins, blockchain technology, artificial intelligence, and decentralized systems. The metaverse is a digital space that the next generation will utilize. The purpose of this article is to look at the several ways that farming might not just be a part of the metaverse's economy but also utilize it to help create viable business models for the future of farming. This is what this study is trying to do. To be more explicit, the study will focus on the roles that farming may play in the metaverse. After the metaverse came along, digital tools changed from being extra resources to becoming full-fledged ecosystems. In these situations, users may engage with data, people, and processes in real time (Brainport Eindhoven, n.d.; Brix & Jakobsen, 2015). The metaverse is directly accountable for this alteration happening. After the metaverse was created, there was a change that happened after the metaverse. This is a specific reference to the process of creating digital ecosystems in the agricultural field, and it is being produced to provide additional information. These ecosystems were meant to get farmers, suppliers, distributors, researchers, policymakers, and consumers to work together. They let all of these groups connect with every level of the food value chain. These ecosystems were built to make it easier for these different groups to work together. Also, the metaverse's solutions are not only scalable and good for the environment, but they are also made to deal with the problems that come with modern farming. To get these results, people use modeling of surroundings, repre-

24 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: www.igi-global.com/chapter/strategic-integration-of-the-metaverse-in-agriculture/390622

Related Content

Evaluating Computer Games for the Professional Development of Teachers: The Case of Atlantis Remixed

Hakan Tüzün, Tansel Tepe, Tülay Dargut Güler, Fatih Özerand Volkan Uluçnar (2017). *International Journal of Virtual and Augmented Reality (pp. 60-74).*
www.irma-international.org/article/evaluating-computer-games-for-the-professional-development-of-teachers/188481

Copyright Protection through Digital Watermarking

Farook Sattarand Dan Yu (2006). *Encyclopedia of Virtual Communities and Technologies (pp. 66-72).*
www.irma-international.org/chapter/copyright-protection-through-digital-watermarking/18046

Sixth Sense Technology: Advances in HCI as We Approach 2020

Zeenat AlKassimand Nader Mohamed (2017). *International Journal of Virtual and Augmented Reality (pp. 18-41).*
www.irma-international.org/article/sixth-sense-technology/188479

Bunker-Room Mnemonics for Second-Language Vocabulary Recall

Alexia Larchen Costuchen, Larkin Cunninghamand Juan Carlos Tordera Yllescas (2022). *International Journal of Virtual and Augmented Reality (pp. 1-13).*
www.irma-international.org/article/bunker-room-mnemonics-for-second-language-vocabulary-recall/304899

The Meditation Chamber: Towards Self-Modulation

Chris Shaw, Diane Gromalaand Meehae Song (2011). *Metaplasticity in Virtual Worlds: Aesthetics and Semantic Concepts (pp. 121-133).*
www.irma-international.org/chapter/meditation-chamber-towards-self-modulation/50381