

# Chapter 9

## Intersecting Minds and Machines: A Review of Behavioral Intentions Towards Health Intelligence Systems

**Cheryll Anne Augustine**

*Universiti Sains Malaysia, Malaysia*

**Pantea Keikhosrokiani**

 <https://orcid.org/0000-0003-4705-2732>

*Universiti Sains Malaysia, Malaysia & University of Oulu, Finland*

**Nasuha Lee Abdullah**

 <https://orcid.org/0000-0002-5951-5207>

*Universiti Sains Malaysia, Malaysia*

### ABSTRACT

*The integration of technology in the medical sector, particularly for data acquisition and analysis via the internet of health things (IoHT), offers significant potential for enhancing community health management by monitoring individual lifestyle patterns. A systematic literature review focusing on articles published between 2019 and 2021 explored the behavioral intention toward using IoHT-based healthcare systems. Analyzing 20 selected articles revealed a preference for theories such as the technology acceptance model (TAM), the unified theory of acceptance and use of technology (UTAUT), and the theory of planned behaviour (TPB) to facilitate behavioral change. Key factors influencing behavioral intention toward these systems include performance expectancy, perceived usefulness, effort expectancy, social influence, and resistance to change. The findings highlight the importance of user-centric design in developing IoHT-based healthcare systems to effectively meet community health needs, emphasizing that healthcare solutions should be tailored to individual health behaviors and preferences.*

DOI: 10.4018/979-8-3693-1210-0.ch009

## 1. INTRODUCTION

In alignment with the United Nations Sustainable Development Goal No. 3 (SDG 3), which aims to ensure healthy lives and promote well-being for all at all ages, it is imperative to address the challenges of sustainable development through enhancing health outcomes. Alarming, it has been observed that every two seconds, an individual between the ages of 30 and 70 succumbs prematurely to noncommunicable diseases, including cardiovascular disease, chronic respiratory conditions, diabetes, or cancer (Organization, 2020). Two primary objectives of their agenda are to diminish premature mortality from non-communicable diseases by one third through prevention and treatment, and to enhance mental health and well-being. Additionally, there is a focus on augmenting the capability of all nations, especially those in the developing world, to implement early warning systems, mitigate risks, and manage both national and global health threats. Achieving these goals necessitates efficient and ongoing healthcare monitoring. The escalation of lifestyle-related diseases, sedentary habits, demanding work environments, advancements in healthcare monitoring technologies, and the growing utilization of remote devices are identified as key factors necessitating the development of a systematic and analytical approach to healthcare. While healthcare monitoring devices are anticipated to be technologically sophisticated, offering both advanced and basic features across various price points, the process of data collection and analysis has yet to reach its full potential. (Keikhosrokiani, 2020b; Keikhosrokiani, Mustaffa, & Zakaria, 2018; Keikhosrokiani, Mustaffa, Zakaria, & Sarwar, 2012; Keikhosrokiani et al., 2015). This shortfall may stem from the overwhelming volume of data sent to hospitals, where it is not effectively segregated or analysed. Moreover, there is a noticeable deficiency in the availability of valuable input and real-time data from patients.

The integration of the Internet of Things (IoT) into contemporary healthcare, known as the Internet of Health Things (IoHT), represents a significant advancement in the application of IoT technologies within the realm of e-health (Rahman, Hossain, Islam, Alrajeh, & Muhammad, 2020). This innovation offers a cost-effective and technologically efficient means for medical providers to engage and communicate with patients. IoHT supports a wide array of healthcare services, including pediatric care, elderly supervision, patient monitoring (M. S. Hossain, 2017), chronic disease diagnosis, and the enhancement of overall societal health and fitness. IoHT solutions not only facilitate improved patient care in a more timely manner but also ensure patient safety. As sustainable cities witness burgeoning populations, healthcare challenges escalate correspondingly. Enormous volumes of healthcare-related raw data are continuously collected from diverse sources in real time. This includes a vast range of patient data acquired routinely. However, the task of disease diagnosis is significantly hindered by a lack of skilled labour, delays in procedural functions, and outdated manual methods. In such scenarios, the accurate identification of medical conditions becomes paramount. The early diagnosis of chronic diseases is considerably facilitated when medical professionals have insight into the physiological and genetic factors influencing the patient's health.

This raises a red flag as mortality rates continue to climb, primarily attributed to heart and chronic diseases, according to a survey conducted by the World Health Organization (Organization, 2020) and analysis from the Peterson-KFF Health System Tracker, a comprehensive resource dedicated to monitoring and evaluating the performance of the U.S. healthcare system. Despite a sudden surge in Covid-19 deaths in January 2022, heart disease remains the persistent leading cause of death in the U.S. from March 2020 to February 2022, as illustrated in Figure 1. This prevalent cardiovascular ailment, which poses a significant threat to communities, is heavily influenced by individual habits. Given the diversity

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/intersecting-minds-and-machines/344153](http://www.igi-global.com/chapter/intersecting-minds-and-machines/344153)

## Related Content

---

### Advanced Storage Technologies for Business Continuity

Nijaz Bajgoric (2009). *Continuous Computing Technologies for Enhancing Business Continuity* (pp. 234-253).

[www.irma-international.org/chapter/advanced-storage-technologies-business-continuity/7140](http://www.irma-international.org/chapter/advanced-storage-technologies-business-continuity/7140)

### Artificial Neural Network for Markov Chaining of Rainfall Over India

Kavita Pabreja (2020). *International Journal of Business Analytics* (pp. 71-84).

[www.irma-international.org/article/artificial-neural-network-for-markov-chaining-of-rainfall-over-india/258271](http://www.irma-international.org/article/artificial-neural-network-for-markov-chaining-of-rainfall-over-india/258271)

### Book Review: Encyclopedia of Data Science and Machine Learning (5 Volumes)

Leigh Wang (2023). *International Journal of Business Analytics* (pp. 1-4).

[www.irma-international.org/article/book-review/319321](http://www.irma-international.org/article/book-review/319321)

### Historical Data Analysis through Data Mining From an Outsourcing Perspective: The Three-Phases Model

Arjen Vleugel, Marco Spruitand Anton van Daal (2010). *International Journal of Business Intelligence Research* (pp. 42-65).

[www.irma-international.org/article/historical-data-analysis-through-data/45726](http://www.irma-international.org/article/historical-data-analysis-through-data/45726)

### Fashion or Function: Examining Consumers' Perceived Values of Mass-Customized Menswear via a Content Mining Approach

Yuli Liang, Snigdha Rangineniand Chuanlan Liu (2022). *International Journal of Business Analytics* (pp. 1-18).

[www.irma-international.org/article/fashion-or-function/313429](http://www.irma-international.org/article/fashion-or-function/313429)