

# Chapter 19

## Digital Systems Innovation for Health Data Analytics

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### ABSTRACT

*Digital innovation for health data analytics has faced obstacles in systems implementation and consumer acceptance. Research suggests that digital health innovation has been a challenge and a slow process for acceptance. At the same time it offers tremendous opportunities in health data analytics for consumers of health services and service providers, such as health information portability, personalization of health information by consumers, easy access and usefulness of health information, better management of data records by institutions and government, and management of information by healthcare staff for patients' engagement and care. Health data analytics is the key for driving digital systems for health innovation. This research seeks to identify the digital health innovation opportunities and obstacles, develop a framework and a conceptual model for digital health innovation that empowers consumer of digital health to use the information to make informed decisions and choices.*

### INTRODUCTION

Digital Systems Innovation for Health Data Analytics have faced obstacles in systems implementation & consumer acceptance. Research suggests that digital health innovation has been a challenge and a slow process for acceptance. At the same time it offers tremendous opportunities in Health Data Analytics for consumers of health services & service providers, such as health information portability, personalization of health information by consumers, easy access and usefulness of health information, better management of data records by institutions & government, and management of information by healthcare staff for patients' engagement and care. Health Data Analytics is the key for driving a Digital Systems for Health Innovation. This research seeks to identify the digital health innovation opportunities and obstacles, develop a framework & a conceptual model for digital health innovation, that empowers consumer of digital health to use the information to make informed decisions and choices.

DOI: 10.4018/978-1-7998-1371-2.ch019

*Table 1. Comparison of Digital Systems with Paper-based Systems*

Digital Systems	Level of Customer Engagement & Managerial Implications: Digital Systems	Paper-based Systems	Level of Customer Engagement & Managerial Implications: Paper-based Systems
Digital Health Systems	High Engagement	Paper-based Health Systems	Low Engagement
Digital Health Records	Easy to use & useful, Fast access, Quick records, High Data Portability, Better Decisions, Highly Cost effective	Paper-based Health Records	Not easy to use, less useful, Slow access, Slow record, No Data portability, Slow Decisions, Least cost effective

## DIGITAL SYSTEMS INNOVATION FOR HEALTH DATA ANALYTICS

Researchers have long argued that the adoption rate of Electronic Health Record (EHR) systems is an important indicator of the degree of national e-health (Bonomi 2016). This is also a measurement in the success of creating, sharing, distribution, of data analytics. Health Data is essential for digital innovation systems to function. Hambleton and Aloizos (2019) argue that the health care industry is one of the last industries to be disrupted by digital technologies. It arguably has the most to gain, particularly from timely, accurate communication and clinical improvements, especially medication safety. At a time when governments of different countries willing to provide quality healthcare to their citizens on a digital platform. For example: Singapore government have made digital health a top priority for their citizens (RIE2020). Jha et al. (2008) state that health information technology in general and EHRs in particular, are tools for improving the quality, safety and efficiency of health systems in countries. They observed that in UK, Netherlands, Australia, and New Zealand generally used EHRs among general practitioners (each country >90%); Germany was far behind (40–80%); and there was a small minority of doctors in the U.S. and Canada who used EHRs (10–30%). They also explained that it is difficult for hospitals to obtain quality data and that only a small fraction of hospitals (<10%), of the countries analyzed had the key components required by an EHR. As shown in table 1 digital systems have many benefits over paper-based systems.

Despite having many benefits, EHR is not uniformly used for national and international healthcare (Bonomi 2016). Data portability within country and across different states pose a real problem due to different jurisdiction applications on data transfer and ownership. Even though the data belongs to consumers of EHR, its not clear about the use and transfer of such records with or without consumers knowledge. The next section seeks to review the literature and propose a conceptual model for digital health innovation. The next section build on the literature review and the conceptual model.

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