

Health Management Systems

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Abstract: *The Healthcare systems are very diverse and complex systems in the world. Tradition systems analysis seems insufficient to model healthcare systems given their complexities and presence of uncertainties. This article proposes a healthcare system framework for managing and conceptualizing data-driven smart healthcare systems.*

Keywords— *Healthcare systems, SCM, Information system, clinical health.*

I. INTRODUCTION

ACCORDING to the World Health Organization (WHO), health is a state of complete physical, mental, and social well-being, and not merely the absence of disease. These three aspects of health form the health triangle. Health is determined by heredity, environment, and human interaction, i.e., a polymorphic dynamic process that exhibits qualitative and quantitative behavior. Due to this dual behavior, some aspects of human health can be quantified, but health itself cannot easily be measured. The main functions of healthcare systems include health service provision, health service inputs and health financing. Research in the context of public health is primarily focused on healthcare systems and the main determinants of a population's health level. Besides healthcare systems, such determinants include life style, biological characteristics, and environment. In a similar manner, according to WHO, the main determinants of health include, social and economic environment and physical environment. There are about 200 countries on our planet, and each country devises its own set of arrangements for meeting the three basic goals of a health care system: keeping people healthy, treating the sick, and protecting families against financial ruin from medical bills. But we don't have to study 200 different systems to get a picture of how other countries manage health care. For all the local variations, health care systems tend to follow general patterns.

II. LITERATURE REVIEW

There are four basic systems:

- **The Beveridge Model**

Named after William Beveridge, the daring social reformer who designed Britain's National Health Service. In this system, health care is provided and financed by the government through tax payments, just like the police force or the public library.

- **The Bismarck Model**

Named for the Prussian Chancellor Otto von Bismarck, who invented the welfare state as part of the unification of Germany in the 19th century. Despite its European heritage, this system of providing health care would look fairly familiar to Americans. It uses an insurance system — the insurers are called “sickness funds” — usually financed jointly by employers and employees through payroll deduction.

- **The National Health Insurance Model**

This system has elements of both Beveridge and Bismarck. It uses private-sector providers, but payment comes from a government-run insurance program that every citizen pays into. Since there's no need for marketing, no financial motive to deny claims and no profit, these universal insurance programs tend to be cheaper and much simpler administratively than American-style for-profit insurance.

- **The Out-of-Pocket Model**

Only the developed, industrialized countries — perhaps 40 of the world's 200 countries — have established health care systems. Most of the nations on the planet are too poor and too disorganized to provide any kind of mass medical care. The basic rule in such countries is that the rich get medical care; the poor stay sick or die.

III. PRIOR APPROACH

Coordinated Information Systems play an important role in addition to the embedded role of IT in clinical and diagnostics equipment, information systems are positioned to produce,

capture, store, process, and communicate timely information to all value partners for better coordination of healthcare. Healthcare service innovation affects people in their roles as providers, co-producers, and consumers of services and alters their patterns of interaction. These interactions require common languages.

For the most part, healthcare services can't be transported or stored, so adaptive resource and capacity allocation is required. Also, many healthcare service providers still use paper-based medical recording processes or electronic standalone applications. There's a need for high-quality, secure, and compliance-driven interoperable systems enabled by IT in healthcare business models and efficient change management processes. Healthcare IT systems must support personalized medicine, telemedicine, home healthcare, e-health, and so on. Decision-support systems are required for secure, high-quality data and information exchange is essential in healthcare. Healthcare organizations face critical barriers to data-driven or analytical care decisions (such barriers include incomplete personal health data, siloed data, large amounts of structured and unstructured data, and paper-based records). Furthermore, organizations primarily use data for business reporting rather than medical decisions (evidence-based medicine). Efficient and effective operational and decision-support systems are needed for all value partners.

IV. OUR APPROACH

The Smart Healthcare Systems Framework of many healthcare organizations attempt to improve efficiency and quality through mergers and networks that adapt the organization's resource base to changing needs and also through rapid product innovations. In other words, they attempt to manipulate what are perceived as the controllable variables in their healthcare service system. However, they often discover that these manipulations lack the necessary scope—mainly because their healthcare service system is much more complex than anticipated. Changes to the scale of healthcare service delivery can affect service quality in unanticipated ways, resulting in unnecessary costs, a staff that's unresponsiveness to patient needs, and missed opportunities for care.

- **SHSF Components:** A fundamental premise of SHSF is that organizations can co-create their service offerings with consumers and break siloed business processes into modular, independent services that can be reused on the fly in loosely coupled dynamic business service choreographies (business processes and

workflows). Furthermore, organizations can source and execute those choreographies using virtual resources. Business-to-business collaboration is a type of virtual environment with requirements for security, auditability, availability, and service-level agreements, and it requires seamless integration with existing resources and applications.

- **Supply-chain management:** The supply chain represents a very large portion of operating expense for most hospitals, so they also need to explore reductions in direct and indirect costs (such as costs related to error-ridden manual processes, inaccurate or incorrect data, and tracking inventory), in addition to lowering the price paid for products and services. Consolidating these processes and automating business processes can help lower costs, improve contract management, and better standardize products.

V. CONCLUSION

Research focused on smart healthcare systems offers an opportunity to develop new theories, models, and methods to help better design, implement, adopt, and manage these technology-based services in terms of usage and contributions to healthcare performance.

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