The Impacts of New Digital Technology Transformation on Singapore Healthcare Sector: Case Study of a Public Hospital in Singapore from a Management Accounting Perspective

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Abstract : As one of the world's most tech-ready countries, Singapore has initiated the Smart Nation plan to harness the full power and potential of digital technologies to transform the way people live and work, through the more efficient government and business processes, to make the economy more productive. The key evolutions of digital technology transformation in healthcare and the increasing deployment of Internet of Things (IoTs), Big Data, AI/cognitive, Robotic Process Automation (RPA), Electronic Health Record Systems (EHR), Electronic Medical Record Systems (EMR), Warehouse Management System (WMS in the most recent decade have significantly stepped up the move towards an information-driven healthcare ecosystem. The advances in information technology not only bring benefits to patients but also act as a key force in changing management accounting in healthcare sector. The aim of this study is to investigate the impacts of digital technology transformation on Singapore's healthcare sector from a management accounting perspective. Adopting a Balanced Scorecard (BSC) analysis approach, this paper conducted an exploratory case study of a newly launched Singapore public hospital, which has been recognized as amongst the most digitally advanced healthcare facilities in Asia-Pacific region. Specifically, this study gains insights on how the new technology is changing healthcare organizations' management accounting from four perspectives under the Balanced Scorecard approach, 1) Financial Perspective, 2) Customer (Patient) Perspective, 3) Internal Processes Perspective, and 4) Learning and Growth Perspective. Based on a thorough review of archival records from the government and public, and the interview reports with the hospital's CIO, this study finds the improvements from all the four perspectives under the Balanced Scorecard framework as follows: 1) Learning and Growth Perspective: The Government (Ministry of Health) works with the hospital to open up multiple training pathways to health professionals that upgrade and develops new IT skills among the healthcare workforce to support the transformation of healthcare services. 2) Internal Process Perspective: The hospital achieved digital transformation through Project OneCare to integrate clinical, operational, and administrative information systems (e.g., EHR, EMR, WMS, EPIB, RTLS) that enable the seamless flow of data and the implementation of JIT system to help the hospital operate more effectively and efficiently. 3) Customer Perspective: The fully integrated EMR suite enhances the patient's experiences by achieving the 5 Rights (Right Patient, Right Data, Right Device, Right Entry and Right Time). 4) Financial Perspective: Cost savings are achieved from improved inventory management and effective supply chain management. The use of process automation also results in a reduction of manpower costs and logistics cost. To summarize, these improvements identified under the Balanced Scorecard framework confirm the success of utilizing the integration of advanced ICT to enhance healthcare organization's customer service, productivity efficiency, and cost savings. Moreover, the Big Data generated from this integrated EMR system can be particularly useful in aiding management control system to optimize decision making and strategic planning. To conclude, the new digital technology transformation has moved the usefulness of management accounting to both financial and non-financial dimensions with new heights in the area of healthcare management.

Keywords : balanced scorecard, digital technology transformation, healthcare ecosystem, integrated information system
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