Oral presentation: 243

Investigating industry 4.0 applications in Sri Lankan healthcare industry to optimize operational performance

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Healthcare is one of the industries that depends on the highest quality services for the wellbeing of the society. Today, the demand for healthcare has been increased with increasing aging population, rapid urbanization, changing diets, inactive lifestyles and rising obesity levels. Healthcare providers search for different innovative methods to optimise their operations and increase the patient satisfaction. Most of the western countries are now adopting new technologies to improve the efficiency of their healthcare processes with the introduction of Industry 4.0 concept. Industry 4.0 which is also known as fourth industrial revolution, uses technologies such as big data, Internet of Things, simulation, augmented reality, cloud computing, autonomous systems, cyber-physical systems, additive manufacturing and systems integration. When Industry 4.0 is applied in the healthcare sector, it is known as Health 4.0. The objective of this study is to investigate the current applications of technology in healthcare processes, applicability of Industry 4.0 technologies in Sri Lankan healthcare domain and how these technologies optimise the operational performance of healthcare operations and processes. Based on a systematic review of literature, a conceptual framework had been developed. Further data was collected from healthcare domain experts using in-depth interviews to identify the level of industry 4.0 technology applications in Sri Lankan healthcare domain for the enhancement of operational performance. A qualitative analysis of data using thematic analysis had been done to evaluate the research findings by identifying the technological applications in healthcare and categorize them under Industry 4.0 components. It was found that major issues such as absence of continuous medical records of patients, early diagnosis of diseases and intellectual waste happening in hospitals can be managed and reduced using Industry 4.0 technologies such as big data analytics, cloud computing and Internet of Things. These technologies can be used to develop systems to share patient information over cloud systems, information systems for resource planning and connecting medical practitioners, disease prediction systems and new sensor based equipment to optimise the healthcare processes, which will make it easier for the patients to get treated and for the hospital staff to manage their routine work efficiently and effectively.

Keywords: Healthcare, Health 4.0, Industry 4.0, operational performance