

INVESTIGATING AND EVALUATING THE INTEGRATION OF HEALTHCARE INFORMATION SYSTEMS

Vasiliki Mantzana

Information Systems Evaluation and Integration Network Group (ISEing) Department
of Information Systems and Computing Brunel University
([ci03vvm](mailto:ci03vvm@Brunel.ac.uk))@Brunel.ac.uk

Abstract

The demands of health system are set to evolve based on patients needs. Thus, healthcare managers and clinicians require decision-making tools that will support them in providing better services to patients. Currently, the non-integrated nature of Healthcare Information Systems (HIS) is strongly associated with: (a) a reduction in the outcome of care and (b) the medical errors that occur. Based on the findings of two different studies in U.S. hospitals, medical errors are responsible for the loss of at least 44,000 and perhaps as many as 98,000 people each year. The limitations of the healthcare systems are related to the loss of 64 persons per day (23,360 people per annum) in UK, due to problems related to the medical errors. These errors are mainly caused by the heterogeneity of the Healthcare Information Systems. It has been stated that minimum levels of automation would reduce the percentage of human life loss by 50-80%. The development of an integrated Information Technology (IT) infrastructure across the healthcare sector will result in enhanced services and will safe and improve human lives.

In an attempt to integrate these systems many healthcare organisations have adopted integrated technologies (EDI), standards (HL7, CENT/TC 251) and projects (Synex, Synapses). The implementation of these integration approaches has provided significant benefits to healthcare organisations. Nonetheless, these integration technologies have not resulted in the development of an integrated IT infrastructure that efficiently automates and integrates healthcare processes and services. Still, there are many problems related to their adoption. In the late-1990s, a new approach to system integration known as Enterprise Application Integration (EAI) was introduced to overcome the integration problems.

Application integration incorporates functionality from disparate applications and supports the development of flexible and manageable IT infrastructure. Normative literature provides rich evidences and demonstrates the benefits that derive from the application of EAI in private and public organisations. Yet, EAI has not been implemented and evaluated in the healthcare sector, with many authors suggesting that research should be conducted in this area. The application of IT in healthcare is associated with resistance to change and lack of awareness. Also, these issues are related to and increase the risk of failure. It is expected that similar problems will be arisen in the case of EAI adoption in healthcare. Moreover, in other sectors, it has been identified that factors such as: (a) costs, (b) barriers, (c) benefits, (d) internal pressures, (e) external pressures etc should be taken under consideration during the implementation and adoption process of EAI. Although these influential factors are

well analysed in literature there is a need to understand, evaluate and explain them in the area of healthcare.

Therefore, the author suggests studying the area of EAI adoption in healthcare, understanding and analysing various factors influencing its adoption. This research will result in a frame of references that explains this process. The proposed frame of references can be translated into a model that: (a) describes in detail the problem area, (b) explains the adoption process (c) provides guidelines for EAI adoption in healthcare, (d) supports decision-making. In doing so, it results in speeding up the adoption process and, thus (a) reducing the risks associated with this process, (b) delivering EAI benefits earlier to users. The latter implies the provision of integrated healthcare services that might eliminate medical errors.