Integrating the IT Infrastructures in Healthcare Organisations: a Proposition of Influential Factors

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Abstract: The healthcare industry is composed of primary and secondary healthcare providers. Each provider needs to exchange information with other providers. Information Systems (IS) developed on different types of hardware and software platforms serve this need. Due to the heterogeneous and distributed nature of information and communicating technology (ICT) in the healthcare industry, sharing of the data has become an issue. There is an urgent need for the integration of these distributed IS. Several efforts have been made to achieve the integration, but traditional methods can only in part address integration problems. Enterprise Application Integration (EAI) offers another solution to addressing the needs of healthcare information systems integration. From a technical perspective, EAI overcomes integration problems at all levels (e.g. data, process etc.) by providing a flexible and manageable Information Technology (IT) infrastructure. From a business perspective, EAI reduces the overall integration costs by minimising integration time and maintenance cost. A literature review in the area of EAI indicates that EAI adoption has not been studied in depth in relation to healthcare organisations. However, there is a clear need for healthcare organisations to seek EAI adoption. In doing so, a conceptual framework for EAI adoption in healthcare organisations is proposed. Decision makers in healthcare organisations, can use this model when considering EAI adoption.

Keywords: Healthcare organisations, adoption, and Enterprise Application Integration.

1. Introduction

Within organisations, information technology implementation decisions are often made at the departmental level, with each department choosing technologies and solutions based on its own needs and beliefs (Erasala et al., 2002). These applications are often not developed in a coordinated way but have evolved as a result of the latest technological innovation (Themistocleo*us* et al., 2000). In most of the cases the programs are written in different computer languages, compiled on different platforms, run on different hardware and have different data structures, types and formats. They function independently and do not share their data. As a result, the IT infrastructure in such organisations consists of a number of autonomous and heterogeneous solutions, which cause integration problems.

Following recent trends the healthcare sector has turned to the use of information technology to automate and improve business processes. As a result, in healthcare organisations there are numerous information systems, ranging from personal management to department-specific decision support systems (Hakkinen et al., 2003). These information systems function independently and their interconnectivity and interoperability have continued to be a big issue, as in any healthcare organisation it is essential to be able to retrieve information from disparate information systems.

In healthcare organisations integration of disparate information systems has therefore been viewed as high priority. Over the last two decades continuous efforts have been made to solve integration problems. EAI has now emerged as another approach to solving these problems. EAI software provides the infrastructure to connect rapidly and interface information between organisations internal and external applications. The advantages of this approach are that enterprises develop a flexible and efficient IT infrastructure by integrating functionality from existing and new applications.

This paper investigates the adoption of EAI in healthcare organisations. Initially the problems of integration of healthcare information systems are explored. Thereafter, the role of EAI in healthcare organisations is examined. Furthermore, the authors investigate the factors that are related to EAI adoption in healthcare organisations. These factors are combined to develop a conceptual framework that focuses on EAI adoption in healthcare organisations.

2. Adoption of information technology in healthcare organisations

The adoption of digital computers, fast communication channels, and the Internet has all dramatically changed the management of information in organisations. However, the healthcare industry is one of the few sectors where the adoption rate of IT is very slow

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compared to other industries (Clark, 1995) due to inadequate IT budgets (Grimson et al., 2000). The healthcare industry expenditure on IT was about 2% of its total budget as compared to 10% in other industries (Clark, 1995). For this reason, the early use of IT in healthcare focused on computerisation of administrative and financial functions and in such areas as patient's appointments and admissions (Egan and Liu, 1994). Only more recently have healthcare organisations turned to the use of IT for clinical purposes and to the improvement of patient care (Ferrara, 1998). Several developments in IT implementation have take place in healthcare organisations, with IT playing an increasingly significant role in its delivery. All these technological developments have been made in providing effectively functioning systems to healthcare organisations to improve healthcare services (Grimson, 2001). Computerised Patient Record (CPR) systems, adoption of Internet along with Intranets and Extranet, use of Asynchronous Transfer Mode (ATM) networks along with local area networks, wide area networks, enterprise systems, integration approaches and remote diagnostics via telemedicine have all experienced significant growth in recent years (Raghupathi and Josph, 2002). As a result, IT is now being extensively used at the primary and secondary levels of healthcare units. This has resulted in healthcare information systems being increasingly developed at primary and secondary healthcare levels. This situation has in turn resulted in a large number of heterogeneous and mutually incompatible systems emerging at these levels (Ferrara, 1998).

These modernisation efforts in the healthcare sector have also resulted in the development of several new types of application at the primary and secondary care levels. At the primary care level in the United Kingdom (UK) it has been observed that the basic foundation of healthcare providers comprises the General Practitioners (GPs) and primary healthcare centres, which provide basic healthcare services to the community. Initially, the demographic and clinical records of citizens are kept with the GPs, most of whom use IT applications such as Egton Medical Information Systems (EMIS) and Patient Information Systems (PIS) in their practices. The current use of IT at GP level has grown significantly. 96% of GPs are now using IT applications for the clinical purposes (Pemberton et al., 2003). Unsurprisingly, the sharing of patients' records among GPs and hospitals is a big issue. Nonetheless, the IT is being used extensively at secondary healthcare level such as general hospitals, results from healthcare information systems being increasingly developed at general hospital levels for wider applications. The use of IT applications at the secondary care level is thus rapidly evolving beyond what in the past has been considered a clinical information system. Healthcare IT now encompasses new tools and healthcare services that are delivered or enhanced through the Internet and other advanced networking technologies such as speech recognition tools. These applications have been developed to support particular functions in healthcare organisations. This too has resulted in a large number of heterogeneous and mutually incompatible systems (Grimson et al., 2000). Overall, therefore, the integration of these applications within hospitals, GPs and government bodies, is one of the most urgent priorities to meet the increasing clinical, organisational and administrative needs (Ferrara, 1998).

As noted above, several approaches have been used to address the problem of systems and data integration. Electronic Data Interchange (EDI), Health Level 7, CEN/TC251, Synergy Extranet (SynEx), Synapses, etc) have been developed and/or deployed in this effort. These integration approaches have themselves caused significant problems, such as high operational cost and functional difficulties. Moreover, most of these approaches are based on message-based technologies such as Message-Oriented Middleware (MOM). According to Edwards and Newing (2000), MOM has a number of disadvantages including (a) it creates single point-to-point links between different applications (b) it requires altering the source and target applications and (c) it increases maintenance costs and complexity. Communication software of this type is not able to achieve the integration of such systems and cannot provide interoperability, whilst meeting the requirements of healthcare organisations as a whole.

3. Integration of healthcare systems with EAI

Enterprise application integration has been introduced as a solution to intra and inter-organisational systems and process integration. It results in more organised business process, increases collaboration among partners and achieves process integration (Themistocleous, 2002). EAI provides a solution to intra- and inter-organisational systems and it combines traditional integration technologies (e.g. database-oriented middleware, interface-based technologies, distributed object techniques, etc) with new application integration technologies (e.g. adapters and message brokers) to support the efficient communication with customers and business

partners. Thus, EAI can efficiently incorporate custom applications, packaged systems and e-business solutions into a flexible and manageable infrastructure Themistocleous et al., 2002). Because of this, EAI is being widely adopted by various organisations to solve integration problems. The benefits of EAI are important, as they reduce the cost of integration and the redundancy of data. Evidence from case studies published in the area of EAI suggests a 50% cost reduction in integration costs (Themistocleous, (2002). Moreover, EAI strengthens supply chains and improves the relationships between organisations and suppliers. Other benefits that EAI delivers include efficient data sharing, reliable data transfer, better security system and good return on investment. EAI can also be used to create an integrated infrastructure in healthcare organisations.

Raghupathi and Josph (2002) report two key dimensions of systems integration in healthcare industry: internal integration of the systems and external integration. Internal level mean at, for example, hospital level and at external means at with other hospitals or healthcare units, general practitioners (GPs) and other stakeholders. All of these can be integrated using EAI technology. Needs to say, this type of integration can provide significant benefits to hospitals and the patients'. Internal hospitals integrated infrastructure provides the facility to share data among different applications connected with each other. Functioning of these applications eliminate the duplication of data entry at different department levels.

4. Theory development for influential factors

Technology adoption has been an important issue for IS research and practice. Many previous studies, the theory of innovation adoption (Rogers, 1983) and integration technologies adoption studies (e.g. Iacovou et al., 1995*;* Somers, 2000; Themistocleous, 2004; Chen, 2003) indicate that different factors influence the adoption of IT-based innovations in an organisational context. These studies investigate the factors that influence the adoption of IT innovations in organisations. Some of this research posits a simple type of causality and suggests that standard research methods such as case studies and surveys can be employed and relationships between the factors can be tested through various methods. The resulting model of adoption does not require complex interpretations by academics and practitioners and it can be easily translated into a set of guidelines (Kurnia and Johnston, 2000). However in a review of IT adoption studies, Fichman (1992) argues that IT adoption factors by themselves are unlikely to be strong predictors for the adoption of complex organisational technology, suggesting that additional factors should be added. Many researchers suggest that, any borrowed model needs to be refined and tailored to match the context of application (Kurnia and Johnston, 2000). Thus, innovation adoption must be studied within appropriate contexts and with factors tailored to the specifics of the innovation. Studies such as Iacovou et al., (1995), Somers, (2000), Themistocleous, (2004) and Chen, (2003), have identified several factors that influence the adoption of integration technologies in different organisations. This research uses this factor approach (Kurnia and Johnston, 2000) for the adoption of EAI in healthcare organisations.

The enterprise application integration adoption process begins with a perceived problem, through research and development to a possible solution. In the area of EAI, Themistocleous (2004) develop a framework for the adoption of EAI in the context of multinational organisations. The authors will be using the Themistocleous (2004) framework as the basis for this research for the following reasons:

- The EAI, being a new emerging technology, has not been widely studied, thus the framework proposed by Themistocleous (2004) is the only available source of reference in this area;
- Themistocleous (2004) undertook an extensive analysis of other integration technologies (e.g. EDI technology) literature and came up with an important set of factors such as benefits, barriers, external pressures and costs;
- These factors have been empirically tested through various case studies in private organisations as well as in public sector;
- These factors help the authors to analyse the adoption of EAI in healthcare organisation;
- The slow adoption of information systems innovations within healthcare organisations, and absence of specific research efforts aimed at understanding IS adoption in this industry;
- The literature review in the area of healthcare indicates limited research on organisational and human aspect of IS adoption. A few researchers such as Kimberly and Evanisko (1981) and Kim and Michelman (1990), have identified factors such as barriers, customer/patient satisfaction, organisational size and administrator and physician relationship, while studying IS adoption in the healthcare area;

- Some of the factors such as barriers and customer satisfaction are also reported by Themistocleous (2004) for EAI adoption in multinational organisations.

In addition to this, the authors have also attempted to study other integration technologies adoption models such as EDI and web services. In doing so, the common factors from these technologies are identified. The description of these factors and the development of a conceptual model for the adoption of EAI in healthcare organisations are discussed in detail in the following sections.

5. Factors related to the adoption of EAI in healthcare organisations

Table 1: Common factors identified from the integration technologies adoption models

Factors	References
Benefits	Iacovou et al., (1995), Heck and Ribbers (1999), Chwelos et al., (2001), Kuan and Chau (2001),Themistocleous (2004), Bradford and Florin (2003), Chen (2003), Wu (2004)
IT Infrastructure	Iacovou et al., (1995), Heck and Ribbers (1999), Chwelos et al., (2001), Kuan and Chau (2001),,Waarts et al.,(2002), Themistocleous (2004), Bradford and Florin (2003), Chen (2003), Wu (2004)
External Pressures	Iacovou et al., (1995), Heck and Ribbers (1999), Chwelos et al., (2001), Kuan and Chau (2001),,Waarts et al.,(2002), Themistocleous (2004), Bradford and Florin (2003), Chen (2003), Wu (2004)
Costs	Iacovou et al., (1995), Chwelos et al., (2001), Kuan and Chau (2001),,Waarts et al.,(2002), Themistocleous (2004), Chen (2003), Wu (2004)
IT Sophistication	Iacovou et al., (1995), Chwelos et al., (2001), Themistocleous (2002), Wu (2004)
Internal Pressures	Kuan and Chau (2001), Themistocleous (2004), Chen (2003)

Various models have been proposed in literature to provide an understanding of the principles behind the adoption of technologies. Based on a comprehensive examination of literature on the adoption of integration technologies, the authors have reviewed a variety of adoption models developed for the adoption of different integration technologies like EDI, ERP, EAI and web services. In doing so, the authors have attempted to identify the common factors in these models that can support the adoption of integration technologies in healthcare organisations. The following six common factors have been identified (Table 1). These six common factors play a crucial role in the adoption of integration technologies in different types of organisation. Moreover, in the context of the EAI adoption, the identification of these factors indicates that these factors are almost the same as reported by Themistocleous (2004) for the adoption of EAI in multinational organisations. In addition to these factors, the authors have attempted to identify the other factors, through a comprehensive review of the normative literature in the areas of EAI, web services and healthcare informatics.

Some researchers, including, Kim and Fichman (1990) have identified several factors for the development of hospital information systems to achieve the competitive advantages. These include (a) administrators' and physicians' relationship (b) political barriers and (c) customers/patients satisfaction. In addition to that, Kimberly and Evanisko (1981), in their study of identifying the factors for technological and administrative innovations in hospitals, empirically tested several factors and came up with organisation size as most important factors for the adoption of technological and administrative innovations. These, and other factors that influence the adoption of EAI in healthcare organisations, are listed in Table 2.

Table 2: Factors identified from EAI and health informatics literature

Factors	References
Barriers	Themistocleous (2004)
EAI Evaluation Frameworks	Themistocleous (2004)
Support	Themistocleous (2004)
Patient's Satisfaction	Kim and Fichman (1990)
Organisation Size	Kimberly and Evanisko (1981)
Physician and Patient Relationship	Pascoe (1983) Kim and Fichman (1990)
Telemedicine	Tyler (2001)
Compatibility	Chen (2003) Wu (2004)

Themistocleous (2004) identified several other factors that influence the adoption of EAI in multinational organisations including IT support, IT sophistication and the evaluation framework. Web services have also emerged as an approach to tackling integration problems. Web services are

used as a part of EAI. Web services adoption studies have reported compatibility as an important factor for the adoption of web services. Therefore, the authors have considered also this as factor for the adoption of EAI technology in healthcare organisations. The description of all these factors for the development of the conceptual model for the adoption of EAI in healthcare organisations is discussed in the next section.

6. Conceptual model for EAI adoption in healthcare organisations

The analysis of the factors identified results in a conceptual model for EAI adoption in healthcare organisations shown in figure 1.

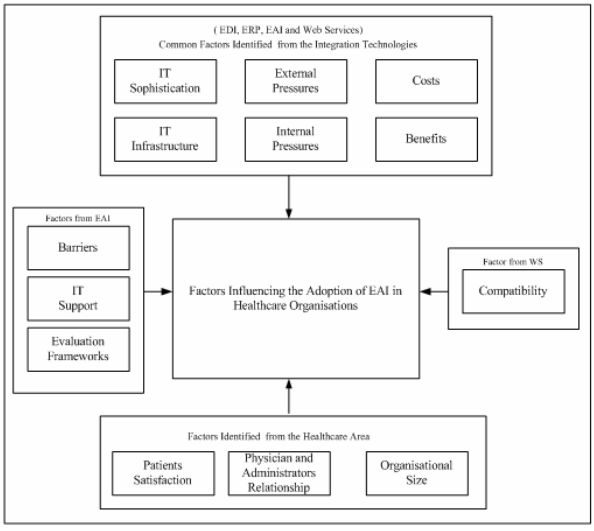

Figure 1: Conceptual model for EAI adoption in healthcare organisations

Each of these factors is now discussed.

Benefits: The identification of the common factors in Section 4 indicates the benefits that integration technologies provide to the organisation's influences as one of the factors for their adoption. In the context of EAI adoption study, Themistocleous (2004) categorised the benefits from adoption of EAI in multinational organisations as operational, technical, strategic managerial and organisational. However, these benefits cannot be applied in the context of other organisations. In the context of healthcare organisations there is a need for the identification and better understanding of these benefits. In doing so, the authors expects that this will provide better understanding to the decision makers of healthcare organisations the scope of these benefits in that particular context. Thus, the authors consider the benefits as an important factor for the adoption of EAI in healthcare organisations.

Barriers: This factor is not widely reported in the integration technology adoption model. Authors like Chowelos et al., (2001) and Themistocleous (2004) have adopted barriers as a factor in the adoption of EDI and EAI technologies, respectively in their models. Themistocleous (2004) suggests that EAI clearly presents barriers to organisations needing to consider before proceeding to EAI adoption. As stated earlier, this factor has not been reported widely, however, its importance and significance cannot be ignored for various reasons. As reported by Davenport (1998) the adoption of integration technology like ERP has caused many problems to organisations, such as bankruptcy, because they did not consider the impact of these technologies in the organisations before adopting them. In the context of healthcare organisations, Kim and Fichman (1990) have also reported barriers as a factor for the integration of healthcare information systems. According to Themistocleous (2004) EAI clearly presents barriers, with organisations needing to consider them before proceeding to EAI adoption**.** Thus, it is important for healthcare organisations to understand these barriers before deciding for the adoption of EAI technology. This can help them to avoid the risks that are associated with its adoption. Therefore, the authors also consider this as an important factor for the adoption of EAI technology in healthcare organisations.

Organisation size: In the organisational literature several characteristics are being used to reflect the size of the organisation (Kwon and Zmud, 1987; Wu, 2004; Chen, 2003). These include the volume of services directly provided by the organisation, business intensity and number of employees. Amongst these, the most important measure refers to the number of employees (Kimberly, 1976). However, in the context of hospitals, several other measures are also used to represent the size, such as the number of beds, total assets and number of personnel. The dominant measure used in hospitals research is the number of beds as the operational definition of size that influences the adoption of technological innovations for providing better healthcare services (Kimberly and Evanisko, 1981). In addition, Chen (2003) reports organisational size as an important factor in the context of web services adoption.

Physicians' and administrators' relationship: The integration of information systems changes the balance of power among units within the organisations (Kim and Fichman, 1990). In the healthcare industry, the relationship between administrators and physicians is particularly important because of the autonomous role of physicians. In addressing this issue, Malvey

(1981) reported that the development of integrated healthcare information systems is a problem, particularly due to the conflicts between the clinicians and administrators. In many situations, these conflicts have negative effects on the relationships between physicians and administrators resulting in a political barrier (Kim and Fichman, 1990).

Costs: Many organisations conduct a Cost Benefit Analysis (CBA) before taking any important decision regarding the adoption of new technologies. Authors Iacovou *et al*., (1995), Martinez and Redondo (2001), Themistocleous (2004), Bradford and Florin (2003) have identified costs as a factor for the adoption of technologies, which facilitates the organisation to evaluate these costs prior to adoption. In doing so, Themistocleous (2004) did an evaluation of EAI adoption costs, and classified them based on the costs classification proposed by Irani and Love (2001). This classification identifies the EAI cost taxonomies as direct and indirect (e.g. human and organisational) information providing support to the decision maker to evaluate the costs of EAI adoption.

Patient satisfaction: Patient satisfaction stands to play an increasingly important role in the growing push toward accountability among healthcare providers. Physicians and hospitals experience growing pressure to increase the quality of their outcomes and enhance the safety of their patients (Pascoe, 1983). As a result, patient satisfaction assessment has become an integral part of health care organisations' strategic processes. Patient satisfaction has a significant impact on the performance of the healthcare organisation. Furthermore, this impact is being integrated into an overall measure of hospital performance. The adoption of information technology in healthcare organisations is being viewed as a tool to help bring improvements in the quality of healthcare services and achieve patient satisfaction (Zabada *et al.*, 2001). The non-integrated IT infrastructure in healthcare organisations has caused the problem in providing high quality medical care and achieving higher patient satisfaction (Kim and Michelman, 1990). Kim and Fichman (1990) report customer/patient's satisfaction as a factor for the strategic use of IT in healthcare organisations and for the integration of healthcare information systems. Moreover, Themistocleous (2004) has also reports the importance of customer satisfaction which the adoption of EAI in the organisations.

IT infrastructure: The non-integrated nature of IT infrastructure causes numerous problems to organisations, which need to unify their information systems and fully automate their business processes (Themistocleous and Irani, 2002). This influences the decision regarding EAI adoption in healthcare organisations, to provide better healthcare services, improve decision-making process, etc.. Grimson et al., (2000) also reported the existing IT infrastructure in healthcare organisations as a key obstacle in providing better healthcare services. The existing IT infrastructure is therefore a factor that affects the introduction of EAI in healthcare organisations.

IT sophistication: Information technology sophistication is reported as a factor in integration technologies adoption models. The finding of two studies on the adoption of EDI Iacovou et al., (1995) and Chwelos et al., (2001) report that the organisations with sophisticated IT resources will be likely to be adopters of EDI technology. Lacovou *et al.*, (1995) do not report this as an independent factor, but consider it as a dimension of the organisational readiness factor in their model of EDI adoption. In the context of EAI adoption, Themistocleous (2004) has reports IT sophistication as a factor in his model. This is due to the level of understanding in addressing technical problems at an enterprise and cross-enterprise level. Wu (2004) reports IT sophistication as a factor, and represents this as technological skills readiness. According to Wu (2004), technological skills readiness is concerned with the level of required knowledge of IT personnel for the adoption of web services. As a result, organisations with higher technological skills tend to show a greater intention to adopt web services.

EAI evaluation frameworks: There is confusion in the market regarding the adoption of EAI technologies and packages, due to the diversity of EAI products and technologies. In addressing this issue, Themistocleous (2004) developed two different types of frameworks: one for the integration technologies and the other integration packages. These frameworks highlight a combination of integration technologies that can be used to integrate an IT infrastructure. In addition, these frameworks provide the support for the evaluation of EAI packages and technologies and provide the support to the organisation in its decision-making process to overcome the confusion regarding the selection of particular EAI technologies and packages. Themistocleous (2004) has reports this factor for the adoption of EAI technology. Therefore, it is important to study the validity of these frameworks in the context of healthcare organisation to see how they evaluate the EAI technology.

Support: This factor is related to vendor support, consultant support and management support. The adoption of EAI requires organisations to invest considerable amounts of money on their IT infrastructure, such as for hardware and software implementation and maintenance. Themistocleous (2004) has reports support as factor for the adoption of new technologies (e.g. EAI). This is for several reasons, such as organisations having limited knowledge of EAI adoption or lack of employees with EAI skill. Healthcare organisations are lacking the technical expertise and skill regarding EAI technology. Therefore, they need support like that from vendors and consultants while taking the decision of EAI adoption.

Compatibility: Compatibility has long been considered as a factor during the technology adoption process. Rogers (1983) defines compatibility as the degree to which an innovation is perceived as consistent with the existing values, past experience and needs of potential adopters. Using the same concepts in the web services' adoption model, Chen (2003) considered compatibility as a factor and argued that web services can be implemented as a way of wrapping older technologies to provide interoperability of new technologies with legacy systems. Wu (2004) has also considered the compatibility as a one of the factors for the adoption of web services.

Telemedicine: Traditionally, telemedicine systems have been designed to improve the care process by allowing physicians to consult a specialist about a case without sending the patient to another location, which may be difficult or time-consuming to reach. However, the existing infrastructure of telemedicine is based on dedicated private networks. These networks are relatively expensive to develop and maintain. Developments in technology such as the wide availability of Internet connectivity and client and server software, and video conferencing have made low-cost telemedicine applications more feasible. However, the non-integrated nature of the infrastructure of many healthcare organisations does not allow much potential usage and the consequent advantages attached to telemedicine.

Internal pressures: This factor represents several pressures such as technical and managerial. Healthcare organisations have various drivers such as provision of better healthcare services, medical errors, data security and privacy, that motivate the adoption of new technologies. These pressures initiate the adoption of EAI in healthcare organisation.

External pressures: The adoption of integration technologies in various organisations indicates that the organisations were subject to several external pressures from agents such as competitors, suppliers and customers for the adoption of integration technologies. In the context of healthcare organisations, there are several stakeholders, such as patients, suppliers, insurance service providers and government bodies collaborating with the organisation. They always expect collaboration with their organisation to be better. Patients continually demand better services and care such as appointments, correct record keeping, and availability of information wherever required. These external pressures influence the healthcare organisation to bring improvements to their working.

7. Conclusions and future research

This paper began with the discussion of IT adoption in healthcare organisations that identifies the different IT approaches adopted in healthcare organisations. These include computerised patient record systems, adoption of Internet along with intranets and extranet, ATM networks, enterprise systems, integration approaches and remote diagnostics technique via telemedicine. The widespread adoption of IT applications at different level in healthcare organisations, with different type of hardware systems raises the need for adoption of integration approaches for the sharing of data between these applications. As a result, various integration approaches have been adopted to solve problems. These approaches can only in part address integration problems. These problems motivate the adoption of EAI in healthcare organisation. EAI has emerged to provide significant benefits to the organisations to overcome integration problem and reduce the overall integration cost due to reduction of integration time and maintenance cost.

This paper identifies a gap in the literature namely the absence of a theoretical model for EAI adoption in healthcare organisations, which ascertains and identifies benefits, barriers and costs associated with EAI adoption in healthcare organisations. Various models have been proposed in the literature to provide an understanding of the principles behind the adoption of IT innovations. Most of these studies are based on the factor approach, in which several factor are identified that influence the adoption of various integration technologies. In addition, in the area of EAI, Themistocleous (2004) developed a framework for the adoption of EAI in the context of multinational organisations. Themistocleous (2004) analysed several factors

and tested them through different case studies that support the adoption of EAI.
Using the concepts of these factors this paper further expands the scope of this research by exploring the areas of EAI, web services and health informatics. In doing so, several other factors were identified including barriers, organisation size, physician and patient relationship and patient satisfaction, telemedicine, IT support, EAI evaluation framework and compatibility. These factors can support the development of EAI adoption model for healthcare organisations. Future research in this area is now needed to test the framework empirically. In the meantime, the proposed framework can be used as a decision-making tool and support management when taking decision regarding the adoption of EAI in healthcare organisations.

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