



# A Multiple Case Study on Integrating IT Infrastructures in the Public Domain

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## ABSTRACT

*Local Government Authorities (LGAs) are complex organisations whose heterogeneous operational structures can be greatly enhanced by effectively using of Information Technology (IT) to support improvements in the quality of services offered to citizens. While the benefits of IT cannot be disputed, there are several concerns about its success as LGAs are confronted with the challenges of synchronising their cross-departmental business processes and integrating autonomous IS. This article examines a potentially important area of IT infrastructure integration in LGAs through Enterprise Application Integration (EAI). The adoption of EAI solutions is a burgeoning phenomenon across several private and public organisations. Nevertheless, where EAI has added efficacy to the IT infrastructures in the private domain, LGAs have also been slow in adopting cost-effective EAI solutions. The shortage of research studies on EAI adoption in LGAs presents a knowledge gap that needs to be plugged. The research methodology followed consisted of an in-depth analysis of two case studies by using the research tools of interviews, observation and referring to archival documents. This research is timely as the demand for integrated service delivery increases, the issues of harmonising business processes and integrating IS becomes pertinent. The conclusion and lessons that can be learnt from this research is that integrating IT infrastructures through EAI achieves significant efficiency in delivering end-to-end integrated electronic Government (e-Government) services. [Article copies are available for purchase from InfoSci-on-Demand.com]*

*Keywords:* Adoption; EAI; Factors; Integration; IT Infrastructure; LGAs

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## INTRODUCTION

With the emergence of Information and Communication Technologies (ICTs), and e-Government, it is possible to improve the efficiency and effectiveness of operational activities within LGAs and to reposition LGA services at regions closer to the citizens (Reddick, 2009; Gichoya, 2005; Wimmer, 2004). Beynon-Davies (2005) and Beynon-Davies

and Williams (2003) support that the rapid developments in technology is contributing to the growth of interest in the use of IT as an effective tool to enable and aid transformation in LGAs. On the other hand, the motivations for e-Government broadly include reduction of internal costs, increase of transparency, and the improvements in service delivery (Irani *et al.*, 2006). However, prior IS research exhibits several difficulties impeding the IT-enabled

organisational transformation in LGAs such as including among others: (a) non-integrated nature of their IT infrastructure do not allow LGAs to deliver end-to-end integrated services (Lam, 2005; McIvor *et al.*, 2002), (b) lack of a single approach for implementing IS instead developing IS independently to provide specific business solutions (Janssen and Cresswell, 2005), (c) inflexible IS security requirements further constraining integration (Weerakkody *et al.*, 2007).

This has resulted in a wide range of different technologies and disparate IS with incapability to interoperate and eventually developing islands of information (McIvor *et al.*, 2002). The inaccessibility of substantial data archives and business processes in the isolated IS within LGAs, is at the heart of the foremost pressing challenges facing the architects of today's IT infrastructures in transforming LGAs (Weerakkody *et al.*, 2007; O'Toole, 2007; Janssen and Cresswell, 2005). Despite the growing interest in this area, in-depth enquiry into how LGAs overcome the several impediments in their way to manage IT-enabled transformations has remained relatively limited (Weerakkody and Dhillon, 2008; Tan *et al.*, 2005). A possible explanation for the scarcity of research interest is the pessimistic impression of LGAs as rigid, risk-averse and having insignificant desire for improvement (Ongaro, 2004; McIvor *et al.*, 2002; Bozman and Kingsley, 1998). However, despite this unfavourable belief, recent years have witnessed a rush of the implementation of e-Government to re-invent LGA services using IT (Weerakkody and Dhillon, 2008; Kawalek and Wastell, 2005). Themistocleous *et al.*, (2005) argues that e-Government platform should not be merely seen as a stand-alone system but as a solution that communicates with back office applications through an integrated infrastructure. E-Government transformation is one of the biggest challenges within the IT-related sector from the perspective of scale and complexity, especially when it comes to adapting existing e-Government to new computing requirements based on the citizens' new service concept (Cheng-Yi Wu, 2007). Integrated e-

Government IS can efficiently automate the business processes of the public domain and increase citizens' satisfaction. However, to achieve such a solution, LGAs need to integrate their IT infrastructures to provide a common and shared view of their information and services (Beynon-Davies, 2005; Lam, 2005). The benefits of integration have not been attained due to incompatible IS, platforms, and high maintenance costs coupled with a lack of understanding of the true purpose, value and power of integrated IS (McIvor *et al.*, 2002).

During the recent years, EAI has emerged to support organisations to integrate their IT infrastructures and deliver high quality of services (Lam, 2005). EAI can be used to piece together LGA information systems with packaged and legacy systems. In other words, EAI acts as a software data translator that takes information from, for example, organisational Enterprise Resource Planning (ERP) systems and convert it into formats that other applications can understand (Linthicum, 2000). Organisations that have integrated their IT infrastructures through EAI have reported significant benefits (Themistocleous *et al.*, 2005; Bass and Lee, 2002). For example, EAI assists in business process integration, support in collaborative decision-making, results in reduced integration cost, securing and providing privacy of citizens' data, and results in developing flexible, and maintainable integrated IT infrastructures (Themistocleous and Irani, 2001). Kamal *et al.*, (2009) proposed and validated an EAI adoption model in the area of LGAs. The model presents several factors (factors – as one of the four components of the model) influencing the decision making process for EAI adoption in LGAs and includes among others: project champion, citizen's satisfaction, critical mass, market knowledge, top management support. These factors have been well analysed in the literature (e.g. Kamal *et al.*, 2008a; 2008b; Kamal and Themistocleous, 2007). These factors can be used to understand EAI adoption for improving IT infrastructures in LGAs. The rest of the article is structured as follows: Section 2 develops the theoretical foundation and

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