

# E-COMMERCE IN CONSTRUCTION

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## EDITORIAL

Right from the onset e-commerce has divided the architectural, engineering and construction (AEC) industries. On the one hand, are the enthusiastic advocates, while on the other the doom-laden opponents. This contradiction, however, is not isolated to e-commerce. Any technology, whether new or old, undergoes such cycles of being in and out of favour. It is all a part of the evolutionary process. It is these issues, uncertainties, trepidations, contradictions and the quest to put them right that make the journey exciting and worth exploring. It is this excitement that has driven me to explore the world of e-commerce. This special issue is a milestone in this long journey...

The collection of papers in this special issue presents a broad overview of research and developments in the field of e-commerce from a variety of international perspectives. The papers highlight a range of issues associated with the adoption of e-commerce. Rankin et al, for example, describe a number of underlying issues which stem from the root characteristics of the industry, including fragmentation, cost consciousness, lack of standards, and the lack of institutional leadership. In their research, Rankin et al focus on e-procurement in an effort to identify the issues surrounding the development of a critical mass of participants required for overcoming some of the adoption and diffusion challenges. They suggest that confidence in adopting e-commerce can increase, if legal and security issues have been satisfactorily resolved. This forms the focus of Betts et al's argument that the demand from governments and construction industry regulators for paperless business processes has led to the development of a number of commercial e-tendering systems which remain untested from legal and security compliance perspectives. Inadequate security opens significant opportunities for fraud and collusion by parties inside and outside of the process. These risks can be partially minimised through detailed and specific conditions of tender. These conditions, however, rely upon effective security mechanisms existing within the system. In their paper, Betts et al identify a number of security and legal requirements for the implementation of secure and legally compliant e-tendering systems, which can be applicable to other forms of e-commerce systems such as project extranets and e-procurement systems. Constantino and Pietroforte, present a different perspective by demonstrating through a survey that the adoption rate of e-commerce applications in the construction market varies widely regardless of their potential benefits. The adoption rate, for instance, varies according to the nature and phases of the transaction process, type of production inputs, as well as size and type of construction firm. Hjelt and Björk present pertinent findings from an ongoing case study concerning the perceptions of the end-users of electronic document management (EDM) systems. They highlight that individuals working in different project roles view the same system differently. Architects, for example, who are regular users of EDM systems, are less sceptical of their use as compared to sub-contractors. In their view, the key issues for adopting EDM systems are no longer technical or cost-related, but are related to business models and psychology. The main challenges, therefore, lie in addressing the psychological factors of taking the systems into comprehensive use and overcoming resistance to change. Findings of the research conducted by Zou and Seo are complementary to those of Hjelt and Björk, which suggest that although the importance of e-commerce adoption and implementation is widely acknowledged, psychological barriers such as the reluctance or inability of construction SMEs (Small and Medium-sized Enterprises) to adopt the technologies, still remain. They suggest that such psychological barriers can be overcome if organisations engage in proactive measures that focus on creating a positive organisational culture that informs, equips and encourages staff to learn, adopt and adapt! Aranda-Mena and Wakefield observe that the adoption of e-business by SMEs in construction lags behind other service and product businesses within the building sector. Their research suggests that the aversion to the uptake of e-business is usually grounded in the perception that e-business has no benefits to offer SMEs. In their paper Aranda-Mena and Wakefield identify a range of real and perceived drivers and barriers for e-business adoption and propose an adoption framework for the industry that is sensitive to the nature of the industry – particularly for e-business uptake in building SME's. Ren et al assert that at the heart of our industry's fragmentation is the

high percentage of SMEs. Difficulties with collaboration, legal and contractual issues and trust building are key barriers that are preventing SMEs from expanding their services and benefiting from the e-economy. Ren et al present an e-engineering contracting system developed for SMEs by an EU funded, e-HUBs project (e-Engineering enabled by Holonomic and Universal Broker Services). The e-Hub is designed to facilitate outsourcing of engineering services through the development of an online collaborative project preparation and contracting workspace to enforce process and knowledge modelling, sharing and configuration, online contracting, and trust building. This in turn can address some of the inherent issues associated with the uptake of e-commerce.