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Transformation of a small-to-medium-sized enterprise to a multi-organisation product-service solution provider

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ABSTRACT

This paper aims to: (1) précis the extant literature on servitization and enterprization transformations, focusing on the role of information technology (IT) and information systems (IS) and their inter-relationships; (2) illustrate these interrelationships by showing how a small-to-medium-sized enterprise (SME) can move from being a predominantly independent SME, delivering only products, to become part of a multi-organisation enterprise able to deliver product-service solutions; and (3) provide generic learning by proposing a new integrated business transformation model. The methodology used is abductive action research. A literature review is conducted to provide academically grounded themes to inform and interpret practical actions. An empirical case study is conducted with a UK SME from the construction industry that provides empirical data to illustrate a business transformation. Inductive reasoning is used to propose a new integrated transformation model. Findings show that enterprization and servitization transformation themes are highly interdependent and co-implementable when an IT/IS focus is taken. Furthermore, these transformations can be used as part of a successful strategy for growth by an SME. A new operating structure, labelled a *product-service enterprise* (PSE), is proposed as part of a business transformation model to assist future deliveries of *product-service solutions* (PSSns). Actions and findings are based on a single empirical case abducted with academic themes. Whilst it is probable that the themes and actions have contributed towards the organization's successful growth, no absolute deterministic causality is claimed.

1. WHY ARE MULTI-ORGANISATION ENTERPRISES AND PRODUCT–SERVICE SYTEMS IMPORTANT?

In a competitive globalising world, organisations increasingly need to adapt their business models to bundle together products and services into integrated customer solutions, a practice that is often referred to as delivering a 'product–service system' (PSS) through the transformative tenets of *servitization* (Baines et al., 2009a). Servitization itself is a relatively new phenomenon and a term first coined by Vandermerwe and Rada in 1988. It describes manufacturing firms' strategic desires to enhance their business models and modus operandi by generating new revenue streams through more highly valued services, in addition to their existing product-related revenue generating activities (Baines et al., 2009a). Thus servitized organisations predominantly deliver PSSs, whereas non-servitized manufacturers will predominantly deliver only products. PSSs providers are considered to be a 'system of products, services and networks of "players" with supporting infrastructure who continuously strive to be competitive, satisfy customer needs and have lower environmental impact than traditional business models' (Goedkoop et al., 1999). It is believed that key benefits to being a provider of PSSs, through servitization, over and above purely product-based deliverables, are that PSSs are able to create a more sustainable competitive advantage for both providers and recipients of the PSSs (Cohen et al., 2006) as revenues increase and strategic relationships are prolonged (Sundin et al., 2009).

Thus the primary tenets of servitization and PSS deliveries seem to be intrinsically linked (Baines and Lightfoot, 2014). However, successful *and* profitable delivery of PSSs through servitization is not straightforward and requires product-centric organisations to undergo radical transformations from only being providers of products towards being providers of products and highly valued, advanced, integrated services via radically adapted business models, something the construction industry might traditionally refer to as a 'turnkey solution provider' (Korczynski, 1996). Servitization transformation in construction can be broad-ranging and include changing inter-related and interdependent aspects of business models by using new product technology, adopting new infrastructure technology, devising an en-

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hanced operations strategy, producing new sales and marketing plans and devising innovative financial revenue streams (Leiringer and Bröchner, 2010).

The full magnitude of such changes, required by servitization and PPS delivery, are often not achievable in the short term by single, traditionally structured organisations, especially if they are a small-to-medium-sized enterprise (SME) with a limited resource base to drawn upon. Hence the pressure on organisations to transform more quickly can sometimes lead to managers of contemporary organisations changing from operating as a traditional, single, autonomous, legal entity towards producing creative outsourcing strategies and, in some more ambitious instances, to use the concepts, structures and strategies of *multi-organisation enterprise* (MOE) management (Binder and Clegg, 2007). The European Commission's (2003) definition of an *enterprise* is 'an entity, regardless of its legal form … including partnerships or associations regularly engaged in economic activities' and is used to define the high-level unit of analysis for this research, with particular emphasis on partnering and associations rather than on the traditional, single, autonomous, organisation. Parts of such MOEs can be either quasi-autonomous parts of large companies (e.g. a product division or a geographically based business unit), or whole SMEs, or quasi-autonomous parts of SMEs. In this context these quasi-autonomous 'parts' are referred to as an *enterprise module* where each module provides a valuable core competence (e.g. specialised design, fabrication, or installation knowledge and equipment) for the whole MOE at some point in the multi-organisation value stream, together with boundary-spanning connective capabilities (e.g. IT, Internet connection, culturally acceptability, etc.) to allow core competences to be effectively absorbed into and utilised by a wider enterprise.

In this context the theory of boundary-spanning uses boundary objects (e.g. people and or artefacts) from parts of different organisations to develop a new joint interest in pursuit of a common goal (e.g. PSS delivery) which unites them while, at the same time, distinguishes them from others who are not engaged in a similar pursuit (Levina and Vaast, 2005). Organisations often try to develop boundary-spanning competences with other organisations for this purpose (Dyer and Singh, 1998; Powell, 1990); a prime example being how IS technologists (e.g. people) develop new shared IT solutions (e.g. artefacts) to help catalyse organisation change. Thus enterprise modules which form the sub-units of analysis in an MOE analysis (Binder and Clegg, 2007), and embed boundary objects, are able to unite with boundary objects embedded in other organisations' modules through boundary-spanning activities; such as new IT developments as 'IT-based artefacts can support the development of an organisation competence in boundary-spanning by becoming boundary objects-in-use' (Levina and Vaast, 2005).

This study purports that by using the concepts of MOE thinking (European Commission, 2003) to deliver a PSS, an organisation can develop increased agility and be more prepared for proactive changes, can become more resilient and reactive to external socio-economic changes and can create greater trust in new and more sustainable revenue streams (Trim and Lee, 2008). Dramatic transformative shifts of this type are considered more likely to occur if information technology (IT) is also embedded into both operational and strategic processing roles (Ojiako and Maguire, 2008) where any information system (IS)/IT being used becomes a boundary-spanning link joining together different enterprise modules. Thus new ISs are becoming increasingly designed to make effective collaborations between organisations in an MOE easier, as IT and IS can act as enabling or boundary spanning (Dorka et al., 2014) elements of MOEs, which in turn make each company's operations more efficient and better integrated (Kowalkowski et al., 2013). Research indicates that the supply chain management, customer relationship management, financial forecasting, and distribution functions are usually the first functions to become integrated in this way across organisations (Rosacker and Rosacker, 2010) as these functions can most directly enable and automate superior operational control over the delivery of PSSs (Belvedere et al., 2013; Clegg and Wan, 2013).

The overall aim of this research was, therefore, to review the extant literature on servitization and enterprization transformations, précis the role that IT (and IS) plays in these transformations, and demonstrate how an SME in the construction sector (Coen Limited) began these transitions as parts of a radical programme of changes to their business model and operations. This research gives some new insights, as most previously published cases on these topics have been founded on large, established, manufacturing organisations trying to diversify, rather than on SMEs trying to grow.

2. PRÉCIS OF SERVITIZATION AND ENTERPRIZATION TRANSFORMATION LITERATURE

This research has commonality with other related research (e.g. Lightfoot et al., 2013) as it's based on publications found in EBSCO, ProQuest, ScienceDirect, Emerald and ProQuest databases published between 1988 and 2014. Search terms used in this search of journal publications were, however, different to other reviews. This study used the following singular search terms: 'technology'; 'servitization'; and 'multi organisation enterprises'. This study also used the following dual search terms: 'technology' *and* 'servitization'; 'technology' *and* 'multi organisation enterprises'; 'ICT' *and* 'servitization'; 'product service systems' *and* 'transformation'; and lastly 'technology' *and* 'product service systems'. Together these search term combinations identified 241 papers. A deeper analysis of these papers' abstracts resulted in 132 papers being excluded as not relevant. Relevant publications were found to be relatively few throughout the late 1980 s and the 1990 s (see Fig. 1), after which they steadily increased in number until the end of 2014, showing that these topics are now well established, of growing interest and concentrated in a few key journals (see Fig. 1 and Table 1). In this paper the key themes from the remaining 109 papers are discussed thematically, and illustrated empirically using Coen Limited (here on in referred to as 'Coen') via an abductive action research case study and inductive reasoning (Barton et al., 2009).

Three distinct observations emerged from having read these 109 papers. Firstly, there was a lack of research devoted to the interdependent relationship between servitization and MOEs' transformations. Secondly, there was a lack of knowledge about how IT and ISs could be used most effectively to encourage servitization and enterprization transformations. And thirdly, there were relatively few case studies found to illustrate these topics in an SME (useful exceptions include Chalal et al., 2015; Dubruc et al., 2014; Ha et al., 2016; Lin et al., 2014) which – when found – were mostly technical conference papers that had not yet become well cited enough in comparison to other research papers based on large manufacturing organisations (e.g. Gremyr et al., 2010). The following sections give a précis of IT/IS focused themes from the relevant, identified, extant, academic literature.

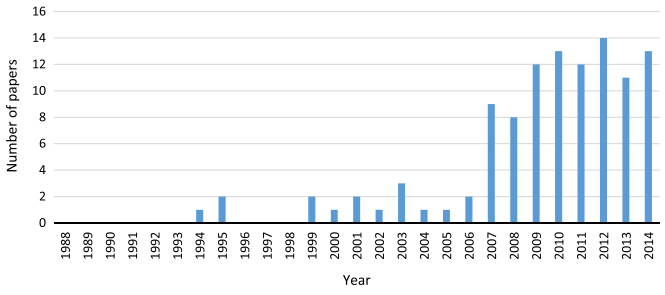

Fig. 1. : Distribution of papers relating to technology-enabled servitization in MOEs according to search terms.