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Dr Stephen McLaughlin & Professor Robert Paton

Service Science: A Foundation for Service Innovation

Introduction

In relation to product-driven research and development, the subject of innovation within service sector industries appears to have been somewhat neglected [1]. To date, the emerging economies have tended to build their economic success upon their ability to manufacture product and secure commodities at a greatly reduced cost. As these economies develop, they too are investing in the service sector. As we speak, both India and China are producing graduates, technological infrastructures, and service capability: these large developing economies will not stand still and allow the developed economies to monopolise the high-value-add end of the service exchange – the knowledge creation and transfer process [2][3]. *Service innovation*, through the application of *service science*, offers service providers and manufacturers a means of securing knowledge leadership.

KEYWORDS: Service Science, Service Innovation

What is Service Science?

Although an emerging field, *service science* is not necessarily looking to reinvent management practices, but instead to take a fresh, or different view of these practices as they relate to service innovation and the improvement of complex organisational performance. *Service science* is born from an industry-defined pragmatic need to understand how best to manage dynamic, responsive, organisations that are both customer-focused and service-orientated [4] [5].

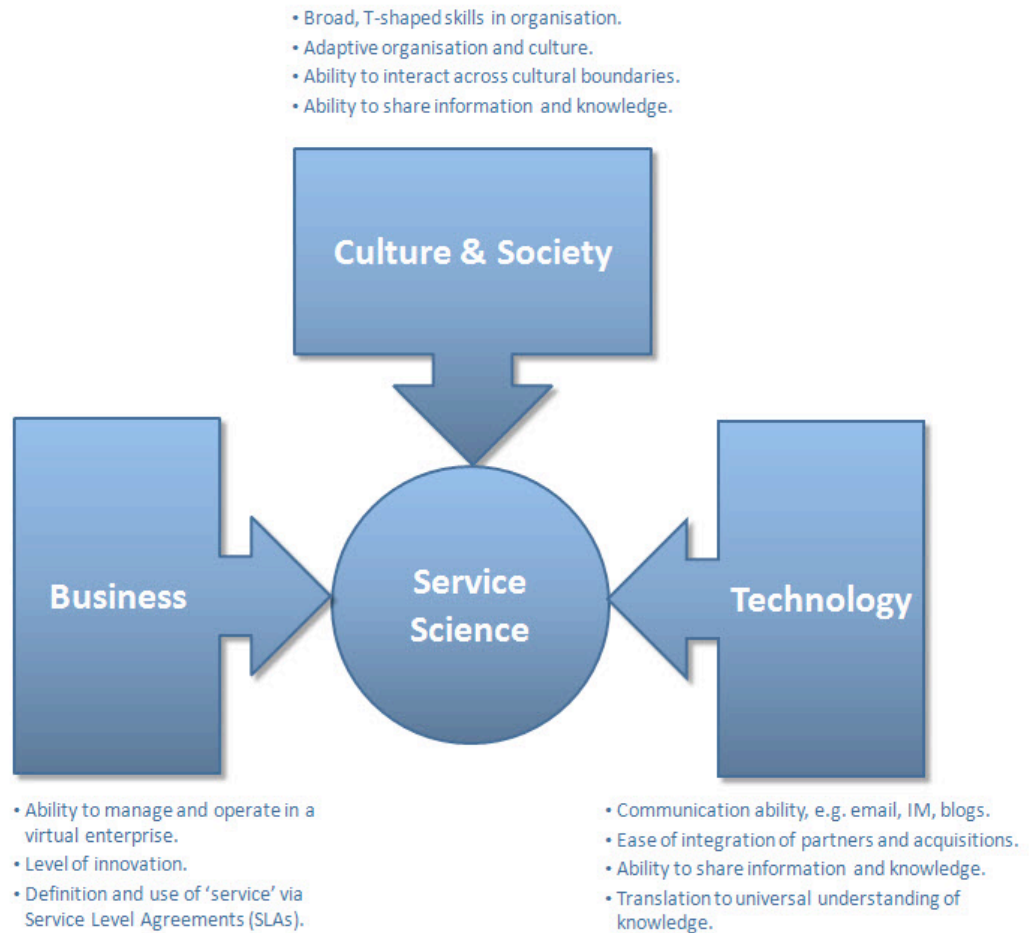
Service science is based around a three-dimensional model (the three dimensions being business, culture and society, and technology) [6] (see Figure 1). The methodological consequence of this model is the creation of an instinctive attitude in people that is related to the provision of service: i.e. people will continuously ask themselves whether they went far enough in understanding all aspects of the relationship between the various parties in the service; whether they have understood the business model and the technology provision; and, critically, whether they have analysed the customer needs and expectations.

Service science also requires a deep appreciation of the interaction between “actors” and systems, and the need for services to fit cultural and community expectations [7].

Service science focuses on developing and linking existing disciplines and languages that enable efficient and effective refining or re-architecting of the service systems as technology, organisational culture, and management practices change.

Service science applies a combination of management insight and scientific and engineering principles, with the objective of analysing how people and technology interact in order to effectively generate value for both service providers and clients [8]. The collaborative relationship between the provider and the consumer is a key component in developing innovative products and services.

Figure 1: Components of service science



Service Innovation

From our understanding of *service science* we can see that innovation in services is much more than the application of information technology (IT). The disappointing return on IT investment in services – a shortcoming known as the “productivity paradox” in services – has resulted in a widespread debate about the causes of and the potential solutions for this shortcoming. What is clear, though, is that we need to view innovation in a much broader context; not looking at any one aspect in isolation, but instead collectively considering technology, culture, management practice, knowledge transfer, and market forces.

Today’s leading enterprises operate on a global basis, cooperating with suppliers, partners and a multitude of stakeholders to deliver service and/or product packages. It is the complex supply chain (as opposed to any single component entity) that delivers the service or product package [9]. Service innovation must come from within the supply chain or network – from knowledge workers who act as individuals or groups within or outside the enterprise’s immediate supply chain.

By understanding how the supply chain or network manages the transfer of the innovation commodity – knowledge – and subsequently engages with this knowledge, we will be better able to stimulate meaningful innovation and general value add [10].

Service Innovation with Complex Supply Chains

To be innovative does not require a special job title or role. Within a supply chain environment, it is useful to identify those most likely to contribute innovative ideas such as how to improve process efficiency, how to reduce costs, how to add more value, how to enhance downstream satisfaction, etc. Such workers are often termed knowledge or artful workers [11] [12]: they are the ones who add value through, in the main, their discipline, and their managerial and functional acumen. Within the supply chain, such knowledge workers may have multiple employers and may belong to differing functional silos, but they have the supply chain in common.

To fully exploit the innovative potential within such complex environments, three requirements should be addressed [13]:

- How best to support the knowledge worker?
- How best to engage with the knowledge worker?
- How best to align the interests of the service provider and the service consumer?

The knowledge worker must be seen as being critical to not only the operational success of the supply chain but also to its future wellbeing. In supply chains there is little benefit to be gained from pursuing, at any cost, process support systems that are ever-enhanced. There is a limit to what can be achieved by continuously enhancing systems for manufacturing, delivery, customer support, and general service support because a critical point will be reached beyond which the 'law of diminishing returns' begins to apply. However, there is tremendous scope and potential, both operationally and strategically, in addressing how knowledge workers interact with the wider systems and, more importantly, how the systems interact with each other [14][10].

How can systems technology and architecture best support knowledge workers? As technology giants such as IBM, Intel and Hewlett Packard moved into the new millennium, they reappraised their core missions to that of service-orientated solutions companies. They strive to provide service management support systems that will engage with the knowledge worker and release their full innovative potential; for example, the service-orientated architectures and associated knowledge-enabling tools currently being developed and promoted by IBM [11]. However, investing in sophisticated technological systems and solutions is futile if such systems are not going to be adopted as intended, nor utilised to their full potential.

It is imperative that organisations find a means of engaging in a meaningful manner with their knowledge workers. This is an area in which technology alone cannot provide the answers: the third dimension of *service science*, namely 'Business', must inform the manner in which the engagement with knowledge workers is approached. Technological solutions must be embedded with not only the systems infrastructure but also the organisational and individual's cultural dynamic: the change and knowledge transfer must be managed in an integrated and inclusive manner [13].

Lastly, the interests of knowledge workers must be aligned with those of their employer? The service economy almost militates against the traditional view of employee/employer alignment: both come together to manufacture or provide a service to a consumer or client and, in doing so, both share in the experience and gain mutual benefits. But in today's public or private service-orientated economy, particularly within the supply chain networks, this relationship is far more complex [9] [15].

Technology has afforded knowledge workers the flexibility to work in diverse locations that are not constrained by a requirement to be present in the workplace in the traditional sense: they often work from home and from remote locations but, irrespective of their location, knowledge workers must be fully engaged in the design of support systems [16]. Technology may assist in supporting the alignment process but it will not deliver sustainable results without the intervention of best and informed management practice.

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An Invitation to Join the Debate

There is growing evidence that to maintain and develop a competitive edge in an increasingly complex, competitive and global market place may require a new paradigm that more effectively brings together business, culture and technology. *Service science* purports to offer at least the foundations of a new way of engaging with the knowledge creators and service deliverers. The evidence for the rise of *service science* as an answer to the complexity of our global, knowledge intensive industries may not as yet be conclusive.

The basic premise of *service science* is that the world of business and commerce is changing. How we manage this new world will also have to change. To maintain a competitive edge in economies with high cost bases, we have to consider how we create and build on knowledge. Knowledge is increasingly being 'worked' from within what many would now classify as service environments. Applying traditional physical and aesthetic-driven research and development (R&D) methodologies to this new world will not provide the sustainable advantage that developed economies require: engaging with the service providers and consumers, both internal and external, of the increasingly complex supply chain may provide an innovative means of leveraging greater performance from an expensive and volatile resource base.

If you would like to join the debate on the nature of *service science*, and its role in service innovation, or simply learn more on this subject, please feel free to contact the authors.

About the Authors

Dr Stephen Mclaughlin is the Head of Research and Development at the Innovation Value Institute (IVI). He is also a Senior Research Fellow with the University of Glasgow. Stephen can be contacted at: stephen.mclaughlin@nuim.ie

Professor Robert Paton holds a chair in Management with the School of Business at the University of Glasgow. His research interests encompass developing sustainable innovation within a change environment. Robert can be contacted at: Robert.Paton@glasgow.ac.uk

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