

## Chapter 4.25

# Sustainable Infrastructure Assets: Capability for Infrastructure Capacity Management

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### **ABSTRACT**

Building for a sustainable environment requires sustainable infrastructure assets. Infrastructure capacity management is the process of ensuring optimal provision of such infrastructure assets. Effectiveness in this process will enable the infrastructure asset owners and its stakeholders to receive full value on their investment. Business research has shown that an organisation can only achieve business value when it has the right capabilities. This paradigm can also be applied to infrastructure capacity management. With limited access to resources, the challenge for infrastructure organisations is to identify and develop core capabilities to enable infrastructure capacity

management. This chapter explores the concept of capability and identifies the core capability needed in infrastructure capacity management. Through a case study of the Port of Brisbane, this chapter shows that infrastructure organisations must develop their intelligence gathering capability to effectively manage the capacity of their infrastructure assets.

### **INTRODUCTION**

Sustainable development is today no longer an option but a key guiding principle for public and private infrastructure providers alike. At the forefront of the sustainability agenda is the creation of a sustainable infrastructure network. The provision of good infrastructure services is critical in

DOI: 10.4018/978-1-60960-472-1.ch425

achieving sustainability's triple bottom-line goals, i.e., environmental, economic and social goals (Bithas and Christofakis, 2006). Infrastructure asset management has thus grown in importance in recent years (Too, Betts, & Kumar, 2006). As owners, operators and maintainers of infrastructure assets, organisations that manage infrastructure assets assume a significant responsibility in ensuring the successful performance of the assets to meet the service needs of their customers. At the heart of asset management is the concept of continuous improvement. Infrastructure organisations should be striving to improve operations, whether from the point of customer satisfaction, increased productivity, better asset quality, better environmental performance or a host of other performance indicators. The asset manager's role embraces all of these concerns to some degree, as the physical infrastructure asset must support the organisation's activities in ways that allow the organisation to service its customers in the best possible way.

Literature in strategy suggests that to understand an organisation's performance, there is a need to focus on factors internal to the organisation, in addition to the industry structure. For example, Ravichandran et al. (2005) argued that organisations that focus on their resources and capabilities can provide the appropriate theoretical lens to examine how factors internal to the organisation can be a source of competitive advantage. An organisation can only gain advantage and achieve superior performance when it has the right capabilities (Smallwood & Panowyk, 2005). However, each industry is driven by its own demand and supply-side economics, which also change over time. One way to resolve this complexity, as suggested by Collis (1994), is to recognise that although the source of sustainable performance can be found in any one of a (very large) number of levels, valuable capabilities are dependent on the context of the industry and time. The notion that capabilities are context dependent is supported by Galunic and Rodan

(1998). They suggested that capabilities developed for a specific purpose are unlikely to be used for other purposes. For example, the capabilities developed for R&D may not be appropriate for marketing of products and services (Lieberman & Montgomery, 1998). Similarly, in the context of time, Collis (1994) proposed that at any point in time in any one industry it may be possible to identify the capability that currently underpins sustainable superior performance. Hence, it is important that in identifying capabilities that are the sources of performance difference, they need to be contextually grounded (Ethiraj et al., 2005).

The infrastructure asset management industry, with conditions such as a strict regulatory regime or non-competitive oligopolistic behaviour before its deregulation in the early 1990s, might be seen as an example where sources of sustained performance have changed very little over long periods. However, literature on infrastructure asset management has paid little attention to the capabilities most appropriate after the deregulation or to the changing business landscape occurring over the last decade. The challenge, therefore, for infrastructure organisations is the optimal allocation of scarce resources among competing initiatives to acquire relevant capabilities.

Due to the context specificity of capabilities, this chapter aims to identify capabilities specific to the context of infrastructure organisation. It examines specifically the capabilities required in the capacity management process within the infrastructure asset management context. The next section will consider the concept of capability to improve organisational performance. This is followed by a discussion on capacity management as a core process within infrastructure asset management. Next, through the use of the Port of Brisbane case study, the key challenges that exist in the management of capacity of infrastructure assets are identified. Finally, the chapter discusses the measures that need to be taken to overcome these challenges before the capability needed is conceptualised.

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