

# Solutions for Integrated Systems

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## INTRODUCTION

Recent empirical evidences shows that in many sectors the provision of integrated bundles of products and services is increasing (Ceci & Masini, 2011; Davies, Brady, & Hobday, 2007; Kapletia & Probert, 2010). An example is found in the information technology (IT) sector, in which ERP (Enterprise Resource Planning) systems comprising hardware, software, and technical support and assistance are increasingly offered as turnkey solutions. The IT clients do not buy single components from different firms. Instead, they purchase a complete ERP system from a single supplier that provides software and hardware as well as consultancy services, post-sales assistance, system customization, and hardware maintenance. In some situations it is also possible to outsource the management of the complete IT system to the external provider, that charges a fixed rate for the storage, management, and processing of data and information. The chapter will explore the implications for operations that firms should face while providing the new offering.

## BACKGROUND

Integrated systems are becoming prevalent in a large number of industries (Davies, Brady, & Hobday, 2006; Galbraith, 2002; Oliva & Kallenberg, 2003). The diffusion of integrated systems is particularly significant in the IT sector (Gager, 2006; Gerstner, 2002), where they are rapidly transforming the competitive landscape of the industry. In order to remain competitive in a sector where value creation is shifting from hardware manufacturing or software development

to service-oriented activities (Dolbeek, 2007), product and service providers face increasing pressure to supply bundled systems rather than individual subsystems (Tidd, Bessant, & Pavitt, 2000). These bundles, often linked by proprietary interfaces, tie customers into a solution with a single point of purchase and after-sales support, and guarantee higher margins than stand alone products or services (Wise & Baumgartner, 1999).

Whilst economically appealing, the provision of bundled products and services poses a number of challenges for IT firms. In this new competitive environment, firms become integrators of components, resources, and services that are developed by external organizations (Brusoni & Geuna, 2001). Supplying integrated systems thus entails a change in the boundaries of the firm. It also requires a redesign of the firm's offers and the reconfiguration of its capabilities (Ceci & Prencipe, 2008; Davies et al., 2006). Compared to firms focusing only on either products or services, integrated systems providers must develop multiple capabilities to address a broader set of customer needs. They must also carefully evaluate the trade-off between the development of specialized and generic capabilities. In today's hypercompetitive markets, the development of multiple capabilities may dilute the firm's core competences and, ultimately, erode its sources of competitive advantage.

Restructuring the organizational architecture of a firm, reconfiguring its internal capabilities, and developing new competences are challenging tasks that can be approached through different strategies. Firms in this industry have developed a variety of different capabilities and have historically followed different paths to become integrated systems providers (Ceci & Masini, 2011; Davies

et al., 2006). However, none of the strategies adopted has yet emerged as generally superior. For instance, firms originally specializing in manufacturing must integrate their manufacturing-oriented competences with service-oriented capabilities. However, the delivery of services requires organizational principles and structures that are almost completely new to a product manufacturer. By the same token, service companies that choose to offer bundles of products and services also need to acquire new competences.

The heterogeneity of the approaches followed by integrated system providers suggest that there is uncertainty about the most appropriate ways to conceive, implement, and manage the provision of integrated systems. They also indicate that the nature of the organizational capabilities required to succeed in this challenge is unclear too. The blurred picture on the practice side is symptomatic of a knowledge gap at the theoretical level as well. Previous studies on this topic have stressed that to become integrated systems providers, firms must develop appropriate capabilities (Wise & Baumgartner, 1999). Yet, the literature provides limited information on how firms should develop these new capabilities or reconfigure their existing ones. It also gives limited guidance regarding the shaping of integrated systems offers and offers few insights into the factors that affect both the current structure and the future evolution of this industry.

## MAIN FOCUS OF THE CHAPTER

### Two Cases of Successful Integrated Systems

To illustrate the empirical grounding of the integrated system phenomenon, two cases of successful solutions will be described. The first case is about Iveco, an Italian manufacturer that specializes in industrial vehicles. Research shows that an industrial vehicle used for business produces revenues for its owner only 20 days over 250 days of use. Thus, simply to break even – to cover costs

such as the vehicle price, maintenance, insurance, taxes and other additional costs – the vehicle must be used 230 days per year. If the vehicle should have a breakdown or other failure that prevents its usage, every additional day or hour out of service dramatically decreases revenues for the owner. The resulting need to resolve vehicle problems or failures as soon as possible is the motivation that pushed the Iveco Customer Services department to adopt a series of measures to increase the speed and efficiency of its post-sales assistance. To fully protect its customers from any sort of damage or risk, Iveco launched its planned maintenance contract (PMC), a full solution that ensures timely vehicle servicing and, in accordance with customer requirements, partially or completely covers any necessary service operations. The offering of PMC solutions has posed a number of challenges to Iveco, however, from a number of standpoints: (i) the development of appropriate technology; (ii) the adequacy of risk management; (iii) the hiring and retaining of qualified workers; and (iv) the redesign of processes. By concentrating on these four aspects, Iveco managed to successfully implement its integrated systems offering. Besides increasing customer loyalty and customer satisfaction, Iveco added a new range of services characterized by high value-added, raising the competitiveness of its offer and the profitability of its business. Iveco realized that in tomorrow's truck and bus industry, customers will not want to wholly own a quickly depreciating asset; they will prefer to lease it, preferably only paying for it when it is actually on the road. Innovations such as per-kilometre contract hiring lead Iveco to continue to invest heavily in customer support, a strategy that has been highly successful in its implementation to date.

The second case is from the aerospace industry: Rolls-Royce was founded in 1884. Now Rolls-Royce is the second largest aeronautics engines producer, and it is the leader in the production of marine propulsion systems. Despite its long manufacturing tradition and the strong capabilities acquired in that area, recently Rolls-Royce modi-

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