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# Key lessons from the implementation of an ERP at Pratt & Whitney Canada

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**Abstract**

This article uses a case study approach to evince the lessons learned from a successful implementation of an ERP system. It points out some strategic, tactic and operational considerations inherent in an ERP implementation that are prerequisites to effective organizational transformation required by a system implementation such as SAP R/3.

At the *strategic level*, top managers established a clear vision of the role of the ERP project in their business model, along with P&WC's strategic priority. They created a feeling of urgency, and precisely determined the scope and scale of the project. Top management then committed substantial resources by allocating sufficient human and financial resources and persevered in backing a structured and disciplined approach to implementation until completion of the project.

*At the tactical level*, P&WC redesigned its organization with a view to increasing coherence and rigor, at an opportune time. It took on recognized technological partners that used a proven methodology that was meticulously applied. The human aspect was given a preponderant role. Moreover, clear measurement indicators were used to assess progress.

*At the operational level*, the Change Leadership and Knowledge Transfer teams played a crucial role in this process. The impact of the ERP system on employees was studied extensively and integrated in the action strategies. Change sessions were decentralized within business units. A massive training program was deployed using many of P&WC's own employees as instructors to ensure a better appropriation of the technology. The experience of Pratt & Whitney Canada (P&WC), a large aeronautics company, reconciles both the requirements of a large-scale project and the capacity of an organization to successfully meet the challenges associated with such an implementation. In particular, this experience demonstrates that success is conditional on adequate management of the complex context of an ERP implementation.


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## 1. Introduction

Today, the integration of companies' business processes is, if not a necessity, a requirement linked to the reactivity imperative. Organizations' zeal to adopt integrated ERP systems is thus highly justified because these systems are believed to dramatically improve competitiveness. SAP R/3 has emerged as the dominant leader in ERP systems, and is now one of the most widely used tools for optimizing and re-engineering business processes (Cooke and Peterson, 1998; Al-Mashari, Al-Mudimigh, 2003). Siemens (Elliott, 1997) and Lucent Technologies (Francesconi, 1998) for instance, have implemented SAP R/3 to improve the integrity of their supply chain.

Nonetheless, even under ideal circumstances, ERP implementation is fraught with formidable challenges (Motwani et al., 2002). For one, the company must successfully transform its organization within the specified time frame and within budget (Welti, 1999; Weston, 2001). Until recently, the implementation process associated with such systems has been particularly long (Laughlin, 1999). Standish Group found that 90% of ERP implementations end up late or over budget (Umble et al., 2003). In some cases, the implementation time is extended indefinitely, which has negative consequences for both the companies and the morale of their employees (Gupta, 2000; Mabert et al., 2001). Note that this endeavor represents much more than a simple technological implementation in the traditional sense of the term (Austin and Nolan, 1999; Mandal and Gunasekaran, 2002). The organizational change and process re-engineering in ERP projects, the enterprise-wide implications, the high resource commitment, high potential business benefits and risks associated with ERP systems make their implementation a much more complex exercise in innovation and change management than any other advanced manufacturing technology (Kumar et al., 2003). Putting in place an ERP necessitates a transformation that is simultaneously strategic, technological, structural, organizational and social. It is therefore not surprising that many ERP implementations fail (Soh et al., 2000). Mabert et al. (2003) found that even with significant investments in time and resources, a successful outcome is not guaranteed. Radding (1999) argues that when an organization channels millions of dollars into a core business application and re-engineers its business processes around it, the exercise invariably becomes much more than a systems development project.

Implementing ERP systems successfully requires an implementation strategy. Cooke and Peterson (1998) observed that organizations that had no strategic plan for SAP implementation performed poorly 90% of the time compared with those that had a plan. A strategy and a plan, however, should follow systematic consideration of the company's requirements and its ability to manage changes that would be required under the new situation. Companies must carefully define why the ERP system is being implemented and what critical business needs the ERP system will address (Umble et al., 2003). As Mandal and Gunasekaran (2003) affirm: "Such a strategy, either step-to-step or Big Bang, will determine how the related changes can be successfully absorbed at various parts of the organization".

While practitioners and academic scholars (articles and cases studies) provide valuable insights into ERP implementation process issues and key factors that lead to a successful implementation, a more systematic empirical analysis of ERP implementations is essential for understanding the ingredients of successful system implementation, as measured by on-time and on/under-budget performance.

We have chosen to analyze the implementation of SAP R/3 at Pratt & Whitney Canada (P&WC), a large aeronautics company, because this initiative reconciles both the requirements of a large-scale project and the capacity of an organization to successfully carry out the organizational transformation required by the implementation of such a system. The project began in June 1996 and ended in January 1999 (two and a half years) and is recognized as a success story (SAP, 2000; MacInnis, 2002). Through the local chapter of their professional association, two of the authors organized interviews with the P&WC project manager in October 1996 at the start of the project and again in July 1999 when the success of the