



ERP Systems and Greek SMEs

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An Enterprise Resource Planning (ERP) system can be defined as customizable, standard application software, which includes integrated business solutions for the core processes (e.g., production planning and control, warehouse management, costing, financial control, sales, distribution) and the main administrative functions (e.g., accounting, human resource management) of a company (Laughlin, 1999; Slater, 1999). ERPs have been a major strategic direction for most multinational enterprises striving to exploit Information Technology (IT) for their competitive advantage (Davenport, 1998). Starting from inventory control systems, IT enterprise applications in the seventies focused on Material Requirements Planning (MRP), which was extended to Manufacturing Resource Planning - MRP II (Wallace, 1990), in the eighties, and with the development of the standard Relational Database Management Systems and client-server architectures in the nineties, ERPs have reached their existing structure (Shtub, 1999). Nowadays enterprises, within the context of globalization and e-business, turn to ERPs to retain and expand their competitive advantages, support activities across their internal value chain, and integrate systems over inter-company supply chains, with customers, suppliers and business partners (Langenwalter, 2000), leading to built-in Advanced Planning and Scheduling systems, front office interactive applications and back-office analytical tools, all within the quest for integrated Customer Relationship Management (Rajagopal and Frank, 2000).

Major vendors of ERP systems worldwide are SAP, PeopleSoft, Oracle, Baan and JD Edwards; these vendors accounted for sixty seven percent (67%) of the total market revenue in 2002 (Gartner Group, 2002), and have experienced tremendous sales growth over the last decade. AMR Research (Scott and Shepherd, 2002) predicts that total ERP revenues will grow at a 14% CAGR, reaching \$36 billion in 2005 from \$21 billion in 2001. The growth is attributed mostly to the need of large organizations to acquire one integrated system that would substitute the chaos of communication between departments that use different applications software; this need is also quickly expanding for Small and Medium Enterprises (SME), trying to achieve company-wide excellence via IT advancement or seeking to link their internal systems with those of large customers and suppliers.

The Greek Realities

The Greek market of Enterprise Resource Planning Systems has been dominated by the international ERP vendors, with some significant presence of local software especially at the level of small and medium size enterprises. In particular, small-size companies do trust local information technology solutions due to their flexibility and quick adoption of legal regulations, and factoring-in cost issues and vendor local support. Nevertheless, the ERP landscape within Greek SMEs remains blur; no comprehensive study of the extent of ERP adoption and functionality use within this business group has been performed to-date nor has there been any effort to promote "true" ERP solutions that encompass typical accounting and sales processes. A recent call for proposals to support information technology infrastructure and business software by the Ministry of Development that has successfully concluded (the program as called "Do Electronic Business" - "Επιχειρείτε Ηλεκτρονικά" in Greek) demonstrated the acute need of Greek SMEs to resort to modern ERP platforms. Almost 90% of the approximately 2500 proposals submitted (and eventually of those funded) requested the implementation of packaged software solutions of international ERPs or "quasi"-ERPs from Greek vendors. Thus, despite the e-business dogmas of B2C, B2B and e-marketplace paradigms, the true need of Greek enterprises is to adopt modern IT solutions for their core processes (and assure effective and reliable backbone transactional IT system) before they embark upon bottom-line improving e-business initiatives.

The OPeR Initiatives and Projects

The Operations Management and ERP Systems Center of the Management Sciences Laboratory is uniquely positioned to assist Greek SMEs adopting the ERP that would fit their needs and effectively guide them to decipher the ERP puzzle. We have successfully completed:

- Two Research and Development projects funded by the General Secretariat of Research and Technology (one addressing key and unique requirements of the maritime sector for the implementation of Baan, and the second tackling integration issues and business-to-business related core functionality within J.D. Edwards implemented at a large retail chain).
- One Industrial Research project complementing the SAP R/3 implementation methodology (ASAP) with a bottleneck handling horizontal thread covering all project phases (see Ioannou and Papadoyiannis, 2004).
- Several consulting projects for Greek SMEs in the areas of Information Systems strategy, ERP system selection and ERP implementations.

Recently, OPeR has established a strategic partnership with Microsoft Corporation and has adopted MBS-Navision as its main ERP tool for educational and research endeavors. Navision is an integrated ERP package for Small and Medium Enterprises (SME), which was developed in Denmark for the European market. Microsoft acquired Navision as part of its expansion into enterprise software (together with Great Planes for the US market), and the ERP is promoted today as MBS-Navision. It includes all necessary ERP modules (accounting, sales, distribution, manufacturing, reporting etc.) and is the software package with the largest growth in the Greek market. OPeR has four (4) doctoral candidates trained and certified on MBS-Navision in the following areas:

- o Financial Management
- o Supply Chain Management
- o Development Tools (Application Builder, Solution Developer, Design)

We are the first to offer a comprehensive ERP course to the undergraduate students of the Department of Management Science and Technology (awarded a Best Practice distinction from Microsoft-Europe), and we are in the forefront of developing training material and case studies or pursuing projects using MBS-Navision - specifically:

- o A book is currently published by the Athens University of Economics and Business on ERP Systems with Applications using MBS-Navision; the book will be offered to the public in 2005, when it will be published by a well established publishing house in Greece, and is in the process of being translated in English for international publication
- o Case studies on inventory management and production management have been developed and are used as presentation material for companies implementing (or selecting) the ERP
- o A genetic algorithm-based approach has been integrated with the typical MPS-ROCP-MRP-CRP runs of MBS-Navision to allow planners for more effective reallocation of production orders under resource capacity constraints
- o A metaheuristic approach is under development for resource scheduling in job-shop environments, to complement the MBS-Navision functionality

There exists a wealth of opportunities for Greek SMEs that adopt standard ERP software and OPeR, with the support of its partners and the academic excellence of its members, is ready to guide the leaders among them in capitalizing on their ERP investment.

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