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# ERP Adoption by European Midsize Companies

***Searching for ERP systems offering a perfect fit.***

Until recently, the major ERP vendors (SAP, Oracle, Peoplesoft, JD Edwards, and Baan) were mainly targeting the high end of the market (companies with more than 1,000 employees), but this market comes close to saturation. Many large companies have already adopted ERP systems and are planning the next step of how to use the installed ERP infrastructures as foundations for e-business [1, 2]. Most of the small- and medium-sized companies still have to make the decision to deploy ERP. The midsize market is an interesting market, for example, the number of midsize companies (50–1,000 employees) in Europe is estimated to exceed 100,000. Data from our research shows that with average annual IT budgets of more than $500,000, the total European midsize market for IT products and services surpasses a staggering $50 billion per year. This market as a whole is very attractive for the major ERP vendors. However, since the wave of adoption by midsize companies is in its early stages, little is known about developments and drivers that form the basis of ERP adoption decisions. The purpose of this article is to understand developments in ERP adoption within the European mid-market.

Our empirical information is based on a large-scale European multicountry/multi-industry survey conducted in mid-1998. Based on the survey data, we will address various issues, such as: How did ERP penetration in the mid-market develop until 1998

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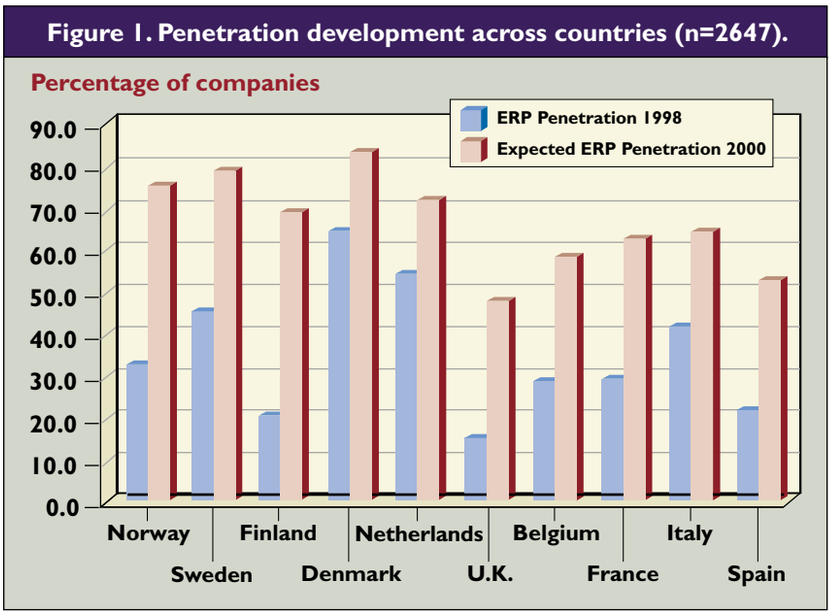
and what can be expected in 2000? Furthermore, we explore criteria used by European midsize companies for investing in ERP systems and for choosing an ERP supplier.

## ERP Penetration Development

The survey included questions both on current (mid-1998) adoption of ERP and planned adoption within two years (mid-2000). In 1998—over all countries and industries—already 27% of the European midsize companies had ERP software installed in one or more functional areas. The functional areas included in the interview were purchase and sales order management, inventory and materials management, production and assembly, transportation, service and maintenance, marketing and sales, warehouse management, financial accounting, and human resource management. Interestingly, a minority (13%) of the adopters used ERP software in just one functional area, while most companies (70%) used it in more than three functional areas. Thus, companies clearly aim at using ERP's main strength: integrating several functional areas. The data further reveals that in nearly all companies, the various functional areas are automated using ERP software of a single vendor. Hence, difficulties in integrating ERP software from different vendors often seen in large companies are not yet an issue for midsize companies. This may change, as midsize companies will increasingly integrate their supply chains, and thus communicate with suppliers that are likely to have adopted different ERP solutions.

With respect to expected further penetration of ERP software our estimations are based on investment indications by the respondents. Among the firms that did not have ERP software installed in 1998, about 40% indicated intention to invest in ERP before mid-2000, yielding an expected average penetration level of 56% over all countries and industries. If we consider average market prices for ERP software, the total European ERP mid-market can be roughly estimated to exceed $5 billion per year for 1999 and 2000. It must be borne in mind that investment intentions are not necessarily equal to actual behavior, but one may cautiously estimate that during this year, a majority of all European midsize companies will embrace ERP.

**Figure 1. Penetration development across countries (n=2647).**




We've shown average penetration percentages across all countries and industries. However, the data also reveals some interesting differences between European countries and industries. Figure 1 shows the penetration developments for each country. In 1998, Sweden, Denmark, and The Netherlands were far ahead with penetration rates of 45% and higher, while U.K. and Spain were lagging behind with penetration rates less than 20%. The data also shows the penetration of ERP software is expected to grow, especially in countries that showed low 1998 adoption figures. Nevertheless, the expected penetration rates in 2000 still are especially high in the Northern European countries: Norway, Finland, Sweden, Denmark, and The Netherlands. This is an interesting phenomenon, which may be related to certain cultural factors. Cross-cultural research by Hofstede reveals four dimensions of cultural characteristics of a country that can be used to group European countries into three clusters [3, 5]. One of these clusters includes the four Scandinavian countries and The Netherlands, which are characterized as having a low level of uncertainty avoidance, a high level of individualism, a small power distance, and a low level of masculinity. This cluster is recognized as the most innovative cluster with relatively weak resistance to new products and a strong desire for novelty and variety. There is no solid proof of a causal relationship here, but these general cultural characteristics of the Scandinavian countries and The Netherlands may have led to a higher level of ERP trial and adoption. The relatively low ERP penetration in Great Britain could similarly be

**Figure 2. Penetration development across industries (n=2647).**

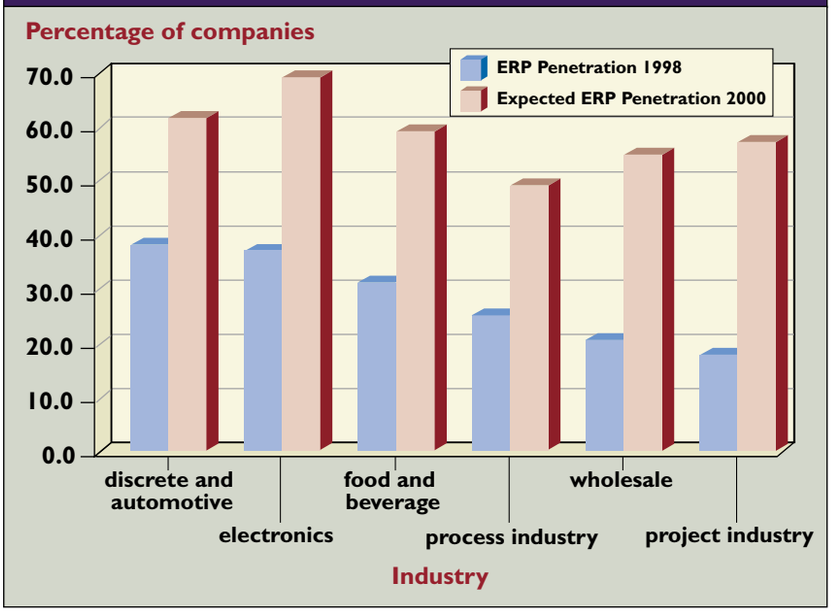
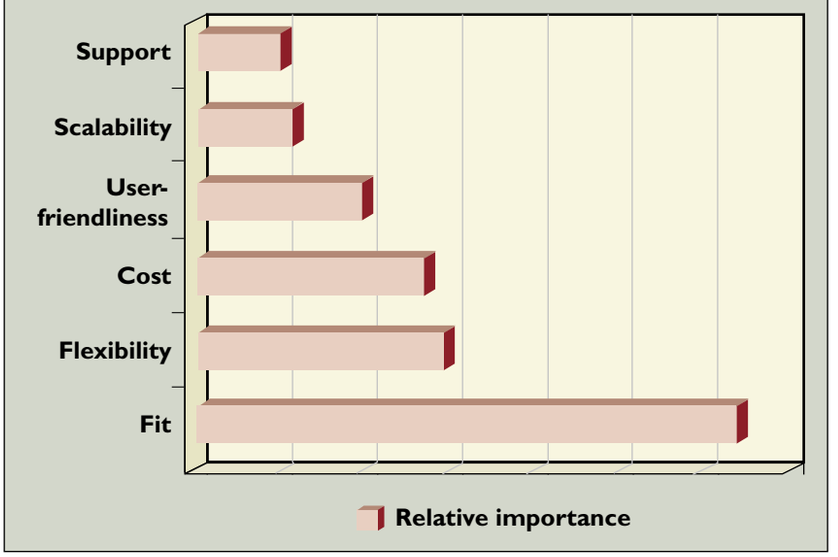



**Figure 3. Criteria for information systems selection (n=2401).**




explained by the fact that Great Britain (together with, among others, Ireland), belongs to a cluster that is described as a fairly risk-averse market. This indicates companies from these countries tend to wait to adopt a new product until a large group of other companies has already adopted it.

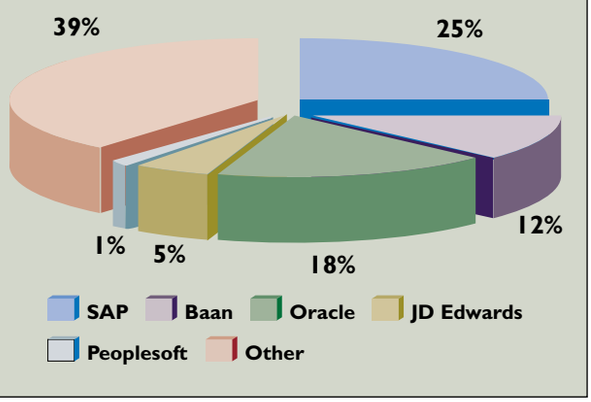
In addition to country differences, the data shows different penetration rates between industries in 1998 (see Figure 2). They run from about 20% in the Project industry and the Wholesale industry up to nearly 40% in Discrete and Automotive. The fact that ERP has its roots in manufacturing is likely to explain these differences. Expected penetration levels for 2000 show, however, that the former industries will make up arrears since many firms in these sectors are planning to implement ERP in the near future. Interestingly, Electronics is expected to become the leader in ERP implementations, with an adoption percentage of nearly 70%.

## Information Systems Selection Criteria

When companies consider buying a new product, the perceived characteristics of the product play an important role in the final decision to start using that new product [6]. Thus the characteristics of the ERP software have to match the criteria used by companies to select an information system. In the survey, respondents were asked to indicate the three most important criteria for selecting their current information system (lowest cost, user-friendliness, fit with business procedures, scalability, support, and training). The results show the most important criterion used in selecting an information system is the best fit with current business procedures (see Figure 3). About one-half of the respondents have mentioned the best fit in the top three criteria ranking, while more than one-third mentioned it as the single most important one. Hence, compatibility with the business procedures is the major issue for companies to decide on a new system. Although ERP vendors have given much attention to allow easy configuration of their packages to match existing business processes, several studies have shown that configuring and implementing ERP systems can be costly, and may even require reengineering entire business operations [4], (see also other articles in this special section, for example [7]). Given the large potential of the midsize market and the limited budgets of midsize companies, there is much potential for an ERP package that succeeds in meeting this main selection criterion. Other important selection criteria are flexibility, cost and user-friendliness of the

**Figure 4. Criteria for supplier selection (n=2623).**


**Figure 5. First considered future ERP supplier (n=1574).**




system, and to a lesser extent scalability and supplier support. The importance of criteria is very similar across all industries, but some differences between countries were found. For example, Italian and Swedish companies focus relatively more on user-friendliness, while Spanish companies score the highest on flexibility. Companies from The Netherlands judge the total cost of implementing an information system as important as the fit with current business procedures.

## ERP Supplier Selection Criteria

In addition to criteria to select a new system, other criteria may be used to select the supplier of a new information system. The data shows that European midsize companies tend to focus on product characteristics rather than on characteristics of the ERP supplier of the product. It makes little difference whether the vendor is a market leader, an international oriented company, or a company with a superior corporate image. Companies predominantly look at the functionality and quality of the products and services for evaluating ERP suppliers, which has been found across all lines of business and all countries (see Figure 4). To a somewhat lesser extent, the speed of implementation, the possibilities of the product for interfacing with other applications, and the price of products and services also are important supplier selection criteria.

Supplier selection brings us to the final issue in this article, regarding the market positions of the various ERP suppliers. The data provides information about the awareness of the various ERP vendors among the midsize companies in Europe (circa mid-1998), their share of the market, and their nomination as preferred supplier for future investment. It should be noted, however, that since the time of the survey market positions may have changed substantially due to various circumstances. For instance, Baan has had significant negative publicity over the past two years, which may enhance the company's awareness level, but also may have worsened their position as preferred future supplier.

At the time of the survey, the penetration of the five major ERP vendors (SAP, Oracle, Peoplesoft, JD Edwards, and Baan) in the European midsize market was rather modest. Obviously, the penetration of ERP at that time was in its early stages. About half of companies still preferred their in-house developed, tailor-made information systems to the standardized systems of the large ERP vendors. Among the adopters of ERP, the combined market share of the big five vendors was slightly more than 20%. Regarding specific vendors, SAP had both the highest awareness (that is, it was the most often spontaneously mentioned supplier by respondents) and highest share in the European midsize market. Roughly 11% of the companies had SAP installed. The European-based ERP vendors (SAP, Germany; Baan, The Netherlands) clearly had a higher level of awareness among the European companies than U.S.-based ERP vendors. SAP and Baan were mentioned spontaneously by 60% respectively 50% of the companies, followed by JD Edwards (33%), and Oracle (28%). Peoplesoft was hardly known in 1998 and had a negligible share of the market. Based on the respondents' indications concerning

preferred suppliers for future investment in ERP systems (see Figure 5), it can be expected that the combined share of the big five vendors will sharply increase to over 60%. SAP is expected to be the most preferred ERP supplier among the European midsize companies; Oracle is expected to strengthen its position.

## Conclusion

While ERP has been adopted by most of the large companies, the midsize market is now catching up. Given the large number of midsize companies, this adoption wave represents a huge number of ERP implementation projects that have been recently completed, are in progress, or are about to begin. These projects will raise mid-market ERP adoption from our measured 27% in 1998 to the expected 56% this year. Both industries and countries that showed low ERP adoption in 1998 will decrease the gap considerably.

This, of course, constitutes a very interesting market for ERP vendors to penetrate. A number of issues emerge from our study that are critical for the development of this market. From the viewpoint of clients, the fit with current business processes is the most important selection criterion for a new system. At the same time, companies within the mid-market rate a low price and short implementation times as highly important. Some of the current ERP vendors are attempting to satisfy these requirements by offering "accelerated" implementation methods. However, these methods are usually based on offering a minimal fit, thus ignoring the number-one wish of small and medium enterprises. Therefore, vendors aiming to penetrate in this market should offer a new generation of ERP systems that is flexible enough to easily handle a wide variety of business procedures. Furthermore, they should have sufficient interfacing capabilities in order to reduce the risk of vendor lock-in and cost of switching. Finally, vendors should take into account that the European midsize business market is not homogeneous. This study shows that significant differences exist in selection criteria among countries. However, for ERP vendors succeeding in satisfying these various requirements, the huge midsize market will be rewarding. C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The survey was conducted at the request of one of the major ERP vendors, but was carried out independently of that company. We are grateful to this vendor for their support of this research.




### How the Survey was Conducted

The survey was performed using a prestructured questionnaire that covered questions about ERP adoption decisions, general company policies concerning IT, and investment planning. Because various European countries were included in the survey, the questionnaire was translated into local languages by translation agencies. Subsequently, telephone interviews were performed with IT managers and financial managers responsible for IT decisions. The interviews were carried out by professional call centers. In total, a substantial sample of 2,647 companies were interviewed from 10 European countries (Finland, Sweden, Norway, Denmark, the Netherlands, Belgium, France, Spain, Italy, and the U.K.) in six industry sectors (discrete and automotive industry, project industry, electronics industry, process industry, food and beverage industry, and wholesale industry). The countries and industries were selected in cooperation with the sponsor of the research. For each country/industry combination an average 45 companies were interviewed. They were randomly selected from local industry databases. This procedure ensures that for each country the total sample size exceeds N=200, and for each industry the sample size is over N=300. C