Journal of Information Technology (2008) 23, 281–296

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Research article

Generic verticalization strategies in enterprise system markets: An exploratory framework

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Abstract
In recent years, enterprise system (ES) software markets have been very dynamic. While contemporary customers are increasingly seeking ES solutions that require less and less customization and implementation effort, it is unclear whether all ES providers should take the 'vertical' path of offering functionality tailored to specific industries. Given the lack of conceptualization that explores ES markets' segmentation, this paper offers a typology of generic verticalization strategies. Building on the resource-based view of the firm and the dynamic capabilities perspective, we match ES providers' organizational characteristics of size and scope with the most effective verticalization strategy. A dynamic dimension is introduced to this framework by analyzing recommended strategies for market entry and growth. Finally, the applicability of the exploratory framework is illustrated using examples from the customer relationship management (CRM) software market.
Journal of Information Technology (2008) **23,** 281–296. doi:10.1057/jit.2008.14
Published online 7 October 2008
Keywords: verticalization strategies; industry segmentation; enterprise systems; customer relationship management; software markets

Introduction

> 'Enterprise systems appear to be a dream come true…While the rise of the Internet has received most of the media attention in recent years, the business world's embrace of enterprise systems may in fact be the most important development in the corporate use of information technology in the 1990s.' (Davenport, 1998: 121–122)

Enterprise systems (ESs) are large-scale organizational systems designed as integrated sets of software modules linked to a common database (Robey *et al*., 2002; Shang and Seddon, 2002). ESs handle basic corporate functions such as finance, human resources, sales, and distribution. These comprehensive, tightly integrated, packaged software solutions seek to integrate the complete range of a business' processes and functions in order to present a holistic view of the business based on a common platform (Klaus *et al*., 2000; Beheshti, 2006). ESs allow managers to make decisions based on information that truly reflects the current state of their business (Davenport *et al*., 2004). Most commonly, ESs include the following applications: enterprise resource planning (ERP), supply chain management, and customer relationship management (CRM) systems (Hendricks *et al*., 2007). Towards the end of the 1990s, ESs became to be regarded as the new 'panacea' in the information systems field, especially for managers who faced the negative consequences of rapid information systems proliferation in their organizations.

The 1980s signified a major shift in organizations' computerized environments. The technological move towards end-user computing and client/server architectures enabled organizations to break off gradually from the restricting centralized structure imposed by the mainframe era. Rather than conforming to 'the organizational way of doing things,' business unit managers were given the ability, via decentralized computer policies and distributed

computer budgets, to design information systems that provided a better fit to their specific needs and demands. However, as with many revolutions, the pendulum probably swung too far to the other side: the development of information systems in many organizations became fragmented and lacked central management. As a result, integration difficulties became more and more salient. At the point when integration disadvantages came to outweigh the advantages of decentralization, ESs emerged as the manageable solution.

The promise of generic systems with the ability to deliver successful organizational results, however, soon proved to have some thorns (Gattiker and Goodhue, 2004). Unlike most other software packages, implementing ESs entails cross-module integration, data standardization, adoption of the underlying business model, and the involvement of a large number of stakeholders (Soh *et al*., 2000). Since ES implementation turned out to be a massive, complex, and risky process (Grossman and Walsh, 2004), many implementations have been unsuccessful in achieving their business objectives (Chen, 2001; Robey *et al*., 2002; Umble *et al*., 2003; Somers and Nelson, 2004). While different organizations employ different business processes and practices, ESs typically consist of business processes that are 'siliconized' into the system. Therefore, in many cases the 'one-process-fits-all' horizontal philosophy creates some obstacles. As Talbert (2002) suggests, organizations have two major alternatives: (1) reconfigure the ES to fit existing organizational processes (software modification and enhancement), or (2) reengineer the organization's processes to conform to the software (process modification and enhancement).

While the first alternative might seem appealing, it is technically complex and can lead to considerable reduction in expected return on investment, not to mention implementation failures. Typically, modifications to ESs' configurations are made during implementation, through configuration tables that allow some flexibility in the system's business rules and are specified by the ES provider. Shang and Seddon (2002) describe an ES as 'a generic "semi-finished" product with tables and parameters that user organizations and their implementation partners must configure, customize and integrate with other computer-based information systems' (p. 272). Any significant attempt to make modifications beyond those specified parameters (e.g., by building interfaces to external software packages) carries a considerable risk to the entire implementation project. Such modifications may add considerable time and cost to the project, introduce new integration difficulties, and increase the complications involved in future upgrading (Gattiker and Goodhue, 2002). Consequently, whereas organizational users tend to push for package modification (to minimize the changes in work procedures), consultants and project managers tend to advocate organizational adaptation, to simplify the implementation and avoid the costs and risks of package modification (Soh and Sia, 2005).

The second alternative – reengineering the organization's processes – involves major challenges as well; as typically there is a large gap between the system-embedded and the practiced processes. In particular, because practiced processes are contingent upon the characteristics of the organizational and environmental contexts in which they have evolved, they exhibit a high degree of variability. Practiced processes are typically path-dependent and may reflect the unique combination of an organization's strategy, structure, and culture. For example, Soh *et al*. (2000) note that procedures in Asian organizations are likely to be different from European or US industry practices (embedded in most ERP packages), having evolved in a different cultural, economic, and regulatory context. Process differences may be significant even across subunits in a single organization (Gattiker and Goodhue, 2004).

This variance comes in contrast to the system-embedded processes that are based on the 'one-process-fits-all' philosophy, and thus represent singular, generic, and context-independent practices (Davenport, 1998; Kremers and van Dissel, 2000; Davison, 2002; Talbert, 2002; Soh and Sia, 2005). ES providers position the processes embedded in their systems as 'best practices' that integrate effectively and efficiently with each other. They encourage implementing organizations to launch business process reengineering initiatives (a radical redesign of business processes aimed at gaining dramatic performance improvements) to bridge any diagnosed gaps. While these initiatives offer an opportunity to improve business practices, they often entail major organizational changes, which no organization undertakes lightly, and they represent a major obstacle on the way to successful implementation (Ross and Vitale, 2000). Furthermore, the transition from proprietary processes to universally applicable processes represents a major threat to enterprises striving for, or watchfully defending, a competitive edge (Davenport, 1998; Seddon, 2005; Soh and Sia, 2005). Implementing organizations become increasingly indistinguishable in their practices, as generic and standardized processes replace unique and customized ones that might have been a source of competitive advantage.

In response to the above difficulties, customers have recently shifted the responsibility for significant system modifications to ES providers (Schwartz, 2003). The market now expects providers to narrow the gaps between system-embedded and practiced processes by transforming their development strategy from a 'one-process-fits-all' strategy to a more segmented one. Instead of viewing the whole market as a single entity, providers can segment their markets into groups of customers with similar needs and offer various products that are targeted at more homogenous requirements.

Market segmentation

Segmentation has been largely studied in the literature. The term 'market segmentation' has been coined by Smith (1956), and has since received considerable attention in both theory and practice. Porter (1985) defines segmentation to be 'the division of an industry into subunits for purposes of developing competitive advantage' (p. 231). While the market segmentation approach was originally developed for the consumer market sector, it has found wide acceptance in the industrial market sector as well (Sollner and Rese, 2001).

Segmenting industrial markets has been argued to be significantly more complex than segmenting consumer markets, mainly because of the profusion of segmentation criteria. Shapiro and Bonoma (1984) argue that customer groups, and even individual customers within these groups, may differ in their demographics, operating characteristics, purchasing approaches, and situational factors. Given these differences as well as the dynamic interaction between products, customers, and the marketplace, the identification of the right variables for segmentation is one of the most important strategic decisions for companies in industrial markets (Shapiro and Bonoma, 1984; Palmer and Millier, 2004). This strategic decision is especially important for high-tech companies, which frequently have a product emphasis and little or no market segmentation and/or market selection (Hlavacek and Ames, 1986). The effective segmentation of industrial markets assists in capturing a new business opportunity, protecting a market position, and averting competitive threats (Hlavacek and Ames, 1986). While widespread benefits have frequently been associated with market segmentation, increasing practical evidence suggests that difficulties in its implementation are often encountered (Dibb and Simkin, 2001). In the fast-evolving markets of information and communication technologies, a preliminary market insight, on the supply-side as well as on the demand-side, and segment-tailored introduction strategies are critical to the successful introduction of innovations (De Marez and Verleye, 2004). Given that the success of a concentrated market segmentation strategy depends on the competitiveness of the market environment (Dolnicar *et al*., 2005) – the more competitive the market, the higher the probability of success – ES providers facing increased competition should aim at segmenting their industrial markets.

Shapiro and Bonoma (1984), acknowledging the importance of individual situations and circumstances, present a 'nested' approach to industrial market segmentation, based on numerous segmentation criteria. The authors suggest that the most general segmentation criteria should include demographic variables: industry, company size, or customer location. As ESs are mostly concerned with core business processes that are relatively homogenous within industries, industry-based market segmentation is probably a very effective general approach for ES providers. ES providers can develop industry-specific products that embed industry-specific processes. By definition, these industry-specific processes are intended to provide a better fit to existing business practices in each industry, and therefore demand less gap-narrowing investments and fewer risks on the part of adopters.

In this paper, we refer to market segmentation by industry as 'verticalization' (Kohavi *et al*., 2002). In recent years, ES providers have taken on the challenge of better tailoring products to practices, and an increasing number of them have adopted a more segmented (i.e., verticalized) strategy, in what seems to be one of the most evident strategic trends in ES markets (Gartner, 2002; Beal, 2003; Ferguson, 2003; Havenstein, 2003). However, as suggested by the exploratory framework developed in this paper, a vertical strategy does not suit all providers. Likewise, a vertical ES is not necessarily the best choice for all customers. The following sections demonstrate why a leading software provider that focuses specifically on ES markets, such as SAP, should opt to offer vertical solutions, while a leading provider servicing many other markets besides ES markets, such as Microsoft, might be better off offering a more general, or 'horizontal,' solution. Similarly, while a firm such as the IJ Company, a top US foodservice distributor, would probably find an ES, that is tailored to the food distribution industry, very valuable, a firm with many different lines of business, for example Virgin, might prefer a horizontal solution that can be used throughout its different business units. Nevertheless, firms like Virgin are probably the minority in the ES market, where the trend towards verticalization seems to be dominant. An ES provider, thus, faces a tradeoff between following the market trend and choosing the strategy that best fits its line of business.

Because this strategic trend of verticalization is still immature, practitioners are facing considerable terminological difficulties in identifying and evaluating plausible alternatives and their consequences. A review of the recent literature indicates that the research community has not yet turned attention, either conceptually or empirically, to this trend. This paper advances knowledge of the dynamics of ES markets by developing an exploratory framework of generic verticalization strategies in these markets. Our conceptualization begins with developing a straightforward typology of three generic verticalization strategies available for industry-based market segmentation. The following section, drawing on the resource-based view (RBV) of the firm and the dynamic capabilities perspective, presents the theoretical perspective that underlies the framework development. Next, we present a framework that matches high-level organizational characteristics of size and scope with their best-fitting verticalization strategies. We then add a dynamic dimension to this framework by analyzing strategies for market entry and growth. Throughout the stages of framework development, we offer seven propositions to guide future research, which can also serve as practical guidelines. Finally, we illustrate the applicability of the proposed framework using examples from the CRM market and discuss the practical implications as well as research contributions.

A typology of generic verticalization strategies

An ES represents a common platform that enables process improvement and data visibility, which are expected to generate cost reduction, responsiveness to customers, and strategic decision making (Ross and Vitale, 2000). As companies have come to realize the potential for large benefits, the demand for ESs has grown dramatically in the last decade. In light of the ubiquity of ESs in recent years, ESs may have turned from being a source of competitive advantage in the market to being a necessity for survival (Davenport, 1998). As ES markets have grown and become more competitive, it has become more important for ES providers, such as SAP and Amdocs, to choose how to position themselves in the market.

Following Cusumano (2003), we define a 'horizontal' strategy to be a strategy whereby a software company develops a product that potentially appeals to most or all market users, regardless of their industry or functional

specialization. Conversely, a 'vertical' strategy refers to a case where a firm offers a software product that targets a certain industry. Steinfield *et al.* (2005), for instance, refer to industry-specific information systems as vertical information systems. In general, the vertical domain may be defined by various customers' characteristics, such as size and location. For instance, SAP developed its Business One system specifically for small-to-medium businesses (SMBs). For our purposes, we define the vertical domain by an industry (e.g., telecommunication, education, health care), and refer to such industries as 'verticals.' That is, a horizontal strategy focuses on a 'one-size-fits-all' solution, while a vertical strategy segments the market by industry to provide appropriately tailored products. We define a software product to be tailored to a particular industry (i.e., an industry-specific solution) when it has been designed to support the business processes unique to that industry. Accordingly, an ES solution designed for the automotive industry, for example, might significantly differ from an ES solution designed for the pharmaceutical industry because these industries typically implement different manufacturing processes (discrete manufacturing *vs* process manufacturing). Note that choosing a vertical strategy does not necessarily imply that the ES provider targets a narrower market. ES providers can increase their overall market coverage by offering solutions for more than one industry (vertical).

While ES providers have many decision-important variables (functional demands, pricing, etc.), our study focuses on the following two decision variables: degree of market verticalization and breadth of market coverage. We assume that ES providers would want to adopt a clear and unambiguous strategy when it comes to market segmentation and market coverage. Therefore, the market verticalization axis is defined by horizontal strategies at one end and highly industry-specific solutions at the other. The market coverage axis ranges from strategies targeted at particular verticals at one end and strategies targeted at all verticals at the other. We acknowledge that, in reality, the actual market position of some ES providers may represent the 'middle' of the axes more than their ends. For example, an ES provider may target all verticals, but eventually develop solutions that do not cover the entire market; covering the entire market with vertical solutions seems tremendously challenging. Nevertheless, our goal is to map the general market strategies ES providers make, and those tend to have a dichotomous orientation. Providers are assumed to focus on either a horizontal or vertical segmentation strategy. In terms of market coverage, they can choose either to focus on specific verticals or to target the entire market.

This framework creates a 2×2 matrix with four different strategies: (1) a horizontal strategy targeted at specific industries – labeled here as 'Non-Adaptable Horizontal,' (2) a horizontal strategy targeted at the entire market – 'Adaptable-Horizontal,' (3) a vertical strategy targeted at specific industries – 'Specific-Vertical,' and (4) a vertical strategy targeted at the entire market – 'Multi-Vertical.' Because the Non-Adaptable Horizontal strategy is neither reasonable nor viable for ES providers, our typology, presented in Figure 1, focuses on the other three generic strategies. Next, moving along the market verticalization line, we explicitly define the three strategies.

A horizontal strategy

ES providers in this category are interested in offering one solution that can accommodate the needs of a wide range of organizations. This, however, is not a simple task. Different organizations, within and across different industries, have different operation processes, marketing processes, etc. Therefore, ES providers tend to allow for some level of customization. However, general ES solutions that enable only the traditional customization, through configuration tables and parameters, are no longer considered valuable. (This is why we do not consider a Non-Adaptable Horizontal strategy in this paper.) Contemporary organizations are expecting their ES providers to help bridge the gap between their practiced processes and system-embedded processes. Therefore, ES providers in this category frequently take customization forward by offering 'add-ons' that make the system more easily adaptable to a particular vertical.

Adaptable-Horizontal strategy

ES providers offering an adaptable system target multiple verticals with the same underlying product. However, this

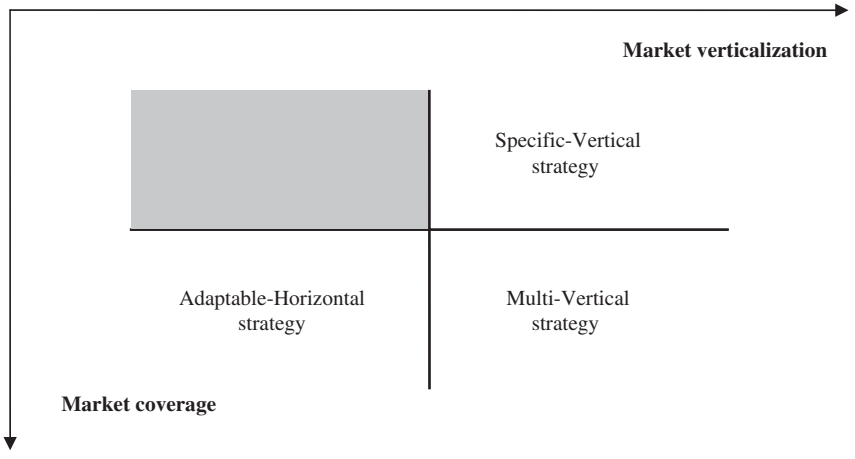

Figure 1 A typology of generic verticalization strategies.

product can be industry-configurable, offering different business processes, business rules, and configuration parameters for organizations in different verticals. A key point is that those industry-specific processes and capabilities are typically built 'on top' of the product, rather than being an integral part of its design. As a result, the product in question may be neither perfectly nor equally adaptable to every vertical.

For instance, Amdocs, a global provider of integrated customer management solutions for telecommunications markets, identified the North-American telecommunications market as possessing unique characteristics that differentiate this industry from other telecommunications industries. In response, Amdocs developed 'add-on' solutions to its generic products that support the processes and business rules that are unique to this geographically defined market (e.g., customer reports, special offers, and tax rules). Accordingly, implementation projects in this market have to deal with significantly smaller gaps between the processes of the system and those of the enterprise, and thus they involve fewer resources and risks. While this example relates to segments within the same industry, it provides a good illustration of an Adaptable-Horizontal strategy.

An alternative version of this strategy is to rely on business partners to provide industry-specific solutions. In this case, the provider offers a configurable product. Partners can then take advantage of the product's configurability to develop different solutions for different verticals. We therefore do not consider this strategy to be Non-Adaptable Horizontal. However, we do not consider this to be a vertical strategy either. Market verticalization in this case is the result of integrating preexisting development efforts, instead of a strategic decision to segment product design by industries, as in the vertical strategy case. Microsoft, for example, executes such a strategy in providing business solutions (Sullivan, 2005). Microsoft has a wide range of certified partners around the world who offer industry-specific solutions for various verticals, such as the automotive, construction, professional services, retail management, and wholesale and distribution industries. We further discuss Microsoft's strategy later in this paper in the context of the CRM market.

Vertical strategies

A vertical strategy is aimed at minimizing the gap between practiced processes and system-embedded processes. ES providers that employ a vertical strategy develop specialized versions of ES software for various verticals. Industry-specific processes are embedded into the system from the early requirements and design stages. For example, a CRM product for the financial industry is tailored to the processes bankers and analysts use, and is therefore not appealing to managers in health care or engineering services. We divide the vertical strategy into Specific-Vertical and Multi-Vertical.

Specific-Vertical strategy

This strategy refers to industry-specific solutions developed for particular verticals. ES providers in this category develop different solutions for different verticals, but limit themselves to the most common ('heavy') verticals (e.g., health care, financial) or to verticals with which they are most familiar, based on their business experience and existing customer base.

Multi-Vertical strategy

This strategy refers to industry-specific solutions for many different industries. As with the Adaptable-Horizontal strategy, ES providers in this category try to target almost the entire market. However, unlike the horizontal strategy, these providers cover the market with many different specialized solutions rather than one solution that (more or less) fits all of them.

Theoretical perspective

The underlying premise of the exploratory framework developed in this paper is that the verticalization strategy adopted by an ES provider has a significant impact on its ability to compete in ES markets. Adopting one verticalization strategy may allow an ES provider to outperform the competition, while adopting another may lead to an inferior competitive position. Therefore, it is crucial for ES providers to identify which verticalization strategy would allow them to enjoy a competitive advantage in the market. In the next section, we identify the high-level organizational characteristics that should guide ES providers in their choice of a verticalization strategy. The current section is devoted to the theoretical perspective underlying our view about the competitive value of verticalization strategies. This section draws on the strategic management literature, particularly on the RBV and the dynamic capabilities perspective, to highlight the mechanisms through which verticalization strategies can leverage providers' resources and thus become a source of competitive advantage.

The RBV (Wernerfelt, 1984; Barney, 1991; Grant, 1991) emerged as a response to the industry structure view, associated with Porter (1980), which dominated strategic thinking during the 1980s. Whereas the industry structure view focuses attention on the external industry environment, the RBV regards internal resources as the instruments and tools that shape this external environment (Cockburn *et al.*, 2000). The RBV argues that the heterogeneity and immobility of firm resources can be a basis for superior competitive performance. Firm resources include all assets, capabilities, organizational processes, firm's attributes, information, knowledge, etc. (Barney, 1991). According to Barney (1991), a resource must have four attributes to become a potential source of sustained competitive advantage. First, it must carry strategic value by enabling strategies that improve the firm's efficiency and effectiveness (i.e., strategies that exploit opportunities or neutralize threats). Second, it should be rare, because competitive advantage is derived from a value-creating strategy that is not simultaneously implemented by many other firms. Third, in order to be a source of *sustained* competitive advantage, the resource has to be imperfectly imitable, which means that other firms cannot perfectly imitate it to generate the same valuable strategy. Finally, the resource cannot be substitutable – there must be no strategically equivalent valuable resources that are themselves either not rare or imitable.

Information systems research has frequently applied the RBV framework in exploring certain information technol-

ogy (IT) assets and capabilities as sources of sustained competitive advantage (e.g., Mata *et al*., 1995; Bharadwaj, 2000; Caldeira and Ward, 2003). Wade and Hulland (2004) conclude that 'the theory provides a cogent framework to evaluate the strategic value of information systems resources' (p. 109).

We draw on the RBV to argue that two classes of firm resources can allow ES providers to attain and sustain a favorable market position – *industry-specific resources* and *software development resources*. *Industry-specific resources* mostly encompass industry-specific *knowledge* assets, such as a thorough understanding of the production processes unique to a particular industry. Such knowledge is strategically valuable for ES providers, because it enables the development of systems that can better address the unique needs of customers in that industry. It is also reasonable to assume that such knowledge is heterogeneously distributed across ES providers. Industry-specific knowledge is often based on being an active player in an industry (not necessarily in the ES market) for a significant period of time. Consequently, such knowledge is neither easily acquired nor is it susceptible to imitation or substitution by competitors. Unique historical conditions are frequently responsible for the possession of industry-specific knowledge (e.g., former business relationships with major players in an industry).

The accepted perception that knowledge possessed by organizations, as opposed to knowledge possessed by individuals, is a socially complex resource adds to the difficulty inherent in imitation or substitution. The knowledge-based view of the firm (Nonaka and Takeuchi, 1995; Grant, 1996; Kogut and Zander, 1996) defines organizational knowledge as a valuable subset of firm resources. It argues that the capability to create and use knowledge is the most valuable source of sustained competitive advantage (Spender, 1996; Nahapiet and Ghoshal, 1998; Nonaka *et al*., 2000), because firm-specific knowledge resources are valuable, scarce, and difficult to imitate, transfer, or substitute. This view underpins our perception about the strategic value of industry-specific knowledge for ES providers.

Software development resources encompass both assets and capabilities that significantly contribute to the efficiency and effectiveness of developing software products. Generally, assets are defined as anything tangible or intangible the firm can use in its processes for creating, producing, and offering its products to a market, whereas capabilities are repeatable patterns of actions in the use of assets (Wade and Hulland, 2004). Knowledge about the methodology guiding successful software development, and the ability to apply this knowledge to efficiently and effectively manage complex software development projects, represent valuable strategic assets and capabilities for ES providers, as well as for most providers of software products. Such assets and capabilities are strategically valuable (they are directly related to the firm's core business activities) and scarce (given the alarming frequency of failures reported in software development projects). The socially complex nature of such assets and capabilities presents an extremely difficult challenge for competitors who wish to imitate or substitute these resources. Mata *et al*. (1995) concluded that out of all the IT resources identified in the literature as potential sources of competitive advantage, only managerial IT skills can provide sustainable market superiority.

The RBV identifies a subset of firm resources as a basis for competitive advantage. However, this is a static view of the strategic value of firm resources, because the RBV does not account for the development and evolution of these resources as the external environment changes. This deficiency is more significant in high-velocity business environments, where change can quickly erode the strategic value of firm resources that have been a source of competitive advantage. The dynamic capabilities perspective (Teece *et al*., 1997; Eisenhardt and Martin, 2000) addresses this deficiency by defining dynamic capabilities as 'the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments' (Teece *et al*., 1997: 516). Dynamic capabilities are change-oriented competencies that enable firms to reconfigure and redeploy their resource base to meet competitive demands (Zahra and George, 2002; Zhu and Kraemer, 2002).

ES markets are considered high-velocity markets, where the business environment is dynamic, market entry barriers are relatively low, new technologies are developed along a revolutionary path, and business opportunities are proliferating. We argue that a dynamic capability of *absorptive capacity* is critical for the continuous strategic success of ES providers. Cohen and Levinthal (1990) define absorptive capacity as 'the ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends' (p. 128). They then argue that this capacity is largely a function of the firm's (or business unit's) level of prior related knowledge. In the present framework, industry-specific resources and software development resources represent the knowledge bases ES providers can build upon in recognizing, assimilating, and applying new information. These resources may be the basis for a superior asset position in ES markets. However, because of the dynamic characteristics of these markets, it would be difficult for an ES provider to maintain its market superiority without the dynamic capability of reconfiguring and redeploying its resource base to meet new market demands. This may be done by absorbing new information that can be easily integrated with existing, strategically valuable knowledge assets.

Determinants of verticalization strategies

The three generic verticalization strategies, outlined above, represent three different development and implementation strategies available to ES providers. It is important to note that a verticalization strategy is a *market* strategy – a strategy adopted for a particular product market. ES providers, thus, may adopt different verticalization strategies for different ES markets. We further discuss this issue when we analyze the dynamics of ES markets.

As the previous section suggests, the potential benefits and risks of these strategies depend on the specific resources an ES provider holds. Thus, different ES providers adopting the same verticalization strategy may face different consequences. In general, when choosing a verticalization strategy, providers should evaluate their organizational strengths and weaknesses, together with the

assets and capabilities on hand. Their actual or potential capacity to take advantage of market needs or to cope with imminent risks should be estimated prior to adopting a verticalization strategy. For instance, a relatively small and inexperienced ES provider, one that holds only a minor share of the market, may find the adoption of a Multi-Vertical strategy to be too demanding and thus, ultimately, devastating. Furthermore, obeying market trends is not necessarily the best path to follow.

Given these challenges and tradeoffs, it seems essential to have some high-level guidelines that can help ES providers with their choice of verticalization strategy. Obviously, thorough and final verticalization decisions should be based on a comprehensive analysis of the market and on very subtle organizational characteristics, such as the technical capabilities of the R&D personnel, the experience of the management team, and the flexibility of the development processes. Such an examination, however, would require a case-by-case analysis and would not offer the general guidelines of interest, here.

We posit that two high-level organizational characteristics – organizational size and product scope – should guide ES providers in their preliminary decision of which verticalization strategy to adopt. Both characteristics have been extensively used in the research literature as explanatory variables for organizational growth decisions, the rate of organizational change, and various organizational performance measures.

Organizational size has frequently been associated with firm behavior. Haveman (1993) perceived organizational size as the dominant variable in the sociological literature on organizational structure. The managerial literature has used a number of variables to measure organizational size, including number of employees, average sales, and average assets (Leiblein and Miller, 2003). Organizational size has repeatedly been studied as an independent variable in research designs exploring the rate of organizational change as the dependent variable (e.g., Haveman, 1993; Dobrev *et al*., 2003). Concerning product scope, there is a significant literature relating this variable to organizational decisions. Product scope typically relates to the degree of product diversification (Grinyer *et al*., 1980; Grinyer and Yasai-Ardekani, 1981; Weinshall, 1982), and specifically to the range of product markets in which the company is involved (Vermeulen and Barkema, 2002; Leiblein and Miller, 2003). According to Gopalakrishnan and Damanpour (2000), product scope represents two key aspects of an organization's product choice: (1) the extent of product specialization/focus (specializing in one type of product *vs* producing a variety of products), and (2) the type of products in which an organization specializes. Product scope has also been investigated in the context of organizational expansion (Vermeulen and Barkema, 2002).

Overall, the management literature has established both organizational size and product scope as significant variables in the context of positioning and organizational growth decisions. Some studies have examined product scope and organizational size, in a single research design, as two primary determinants of organizational structural characteristics (Allen, 1978; Grinyer and Yasai-Ardekani, 1981; Leiblein and Miller, 2003; Brews and Tucci, 2004), organizational performance measures (Grinyer *et al*., 1980; Vermeulen and Barkema, 2002; Qian and Li, 2003), or dimensions of innovation adoption (Gopalakrishnan and Damanpour, 2000).

Categorization of size and scope

Focusing on organizational size and product scope, we assume that ES providers can be classified into two size categories: *SMBs* and *large businesses*. Following Leiblein and Miller (2003), we think of organizational size in terms of the number of employees, average sales, and average assets. As for product scope, we classify ES providers according to the range of product markets they serve. Providers for which developing and supporting ESs is their main line of business are defined as *specialized* (e.g., SAP). We define providers that have other lines of business, in addition to ESs, *generalized* (e.g., Microsoft). The dichotomous categorization of organizational size and product scope creates another 2×2 matrix, this time of four plausible types of ES providers: (1) specialized SMBs, (2) generalized SMBs, (3) specialized large businesses, and (4) generalized large businesses. Again, as for our typology of generic verticalization strategies, one matrix square is occupied by an artificial and unreasonable category – generalized SMBs. ES providers that are SMBs, and thus have limited resources, would likely refrain from developing a large variety of products and managing multiple lines of business. Instead, those providers would tend to specialize in the ES market.

Having defined three generic verticalization strategies and three types of providers, we now propose a one-to-one match between provider types and verticalization strategies. Based on the theory presented earlier, we suggest that each provider type can be matched with the verticalization strategy that best fits its strategic resources. We start our discussion with product scope.

Typically, providers that have many lines of business (i.e., generalized large providers) have to divide their assets and capabilities between their different business lines. In addition to having a large base of skilled developers, these large providers normally offer other types of software to the mass market, and thus have a large experience in software development – possess *software development resources*. Furthermore, large generalized providers can frequently leverage their brand names to enter ES markets and, thus, are interested in attracting all customer segments. They already have a substantial customer base acquired through their other business lines, and are, therefore, likely to target a large share of the potential ES market. While, generalized providers hold *software development resources*, they do not have significant *industry-specific resources*. Consequently, generalized large providers should not invest considerably in segmenting the market to offer different ES solutions. Rather, they should develop a product that addresses the needs and requirements of as many verticals as possible. Alternatively, these providers should rely on their more specialized partners to offer industry-specific solutions based on their platforms.

Proposition 1a: The most lucrative verticalization strategy for generalized large ES providers is the Adaptable-Horizontal strategy.

Following the same logic, specialized ES providers should generally pursue one of the two vertically focused strategies. These providers focus on ES markets and therefore devote all of their resources to developing and supporting ESs. Shang and Seddon (2002) note that ES providers have a deep knowledge of business practices accumulated from implementations in a wide range of client organizations. ES providers are in the business of developing systems to support business processes. To do that, they acquire knowledge of how business processes are implemented in different types of organizations. That is, as a by-product of serving the ES market, specialized providers acquire understanding of business processes as well as comprehension of the different processes that best fit different industries. These *industry-specific resources* are accumulated over time, and are essential for operating in the ES market. Specialized providers can then leverage this knowledge in order to better service specific verticals. The choice between a Specific-Vertical strategy and a Multi-Vertical strategy should then depend on the size of the provider. While specialized SMB providers should serve one or a few verticals and focus on developing the best-suited solution for these markets, specialized large providers likely have the resources to serve a larger number of vertical markets. As with large generalized providers, large specialists have also a large pool of experienced employees and typically possess slack resources. That is, specialized large providers possess *software development resources* in addition to their *industry-specific resources*. Consequently, just as in the horizontal strategy, large providers should target the *whole* market. However, since they also hold *industry-specific resources*, they should target the whole market with many different industry-specific solutions rather than one adaptable solution.

Specialized ES providers, either SMBs or large businesses, should take the path to market verticalization. The breadth of industries they serve should be determined based on the level of their organizational resources. Thus, we can formulate two additional propositions:

Proposition 1b: The most lucrative verticalization strategy for specialized SMB ES providers is the Specific-Vertical strategy.

Proposition 1c: The most lucrative verticalization strategy for specialized large ES providers is the Multi-Vertical strategy.

Figure 2 presents Propositions 1a–1c graphically. In order to depict the match between organizational characteristics and generic verticalization strategies as clearly as possible, we take Figure 1 and change the variables on the axes to size and scope. The resulting figure gives clear guidelines for best-suited verticalization strategies.

The dynamics of entry and growth

Segmentation is largely a static process, carried out at a point in time based on a snapshot of the market, yet the time frame should reflect the dynamics of the business environment (Sollner and Rese, 2001; Palmer and Millier, 2004). Our framework so far has been static; given certain market conditions and organizational characteristics, it provides guidelines regarding how an ES provider should position itself. However, markets – in particular, software markets – are dynamic. The structure of ES markets has changed dramatically during the last decade, and it is expected to keep evolving in the future. We, therefore, propose a more dynamic analysis. In accordance with the dynamic capabilities perspective, we extend our framework by examining entry and growth strategies using organizational size and product scope as the main determinants. Moving along the size dimension, we start with entry and then move on to growth strategies.

Entry

SMB entrants

As suggested in the previous section, SMB software providers should not opt for a generalized strategy. Such providers do not have the necessary resources to develop and manage multiple business lines. Thus, they should choose to target and specialize in one or a few ES software products. Proposition 1b suggests that SMB ES providers should focus on the ES market, positioning themselves as Specific-Vertical providers. However, new entrants to ES

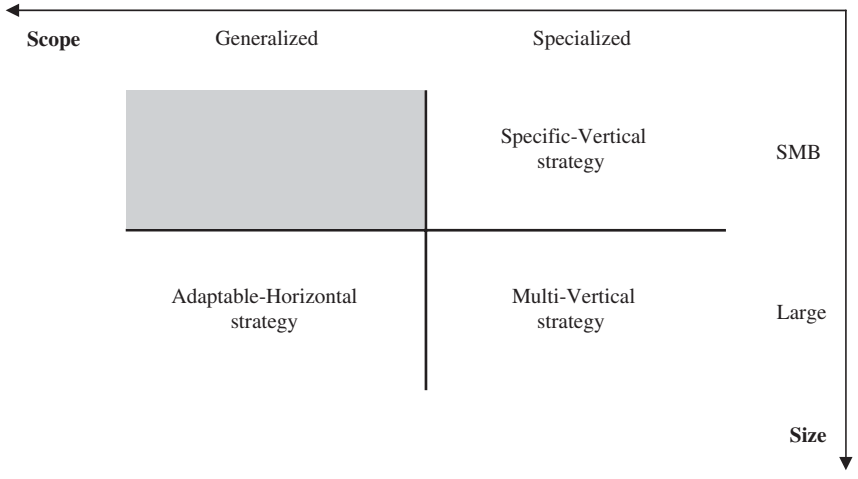

Figure 2 Matching providers' characteristics and generic verticalization strategies.

markets can execute this strategy in more than one way. While entering providers can always start product development from scratch, the R&D process for these products is long, complex, and requires large investments. Alternatively, entering providers may collaborate with an existing dominant provider, usually a generalized large provider (i.e., one that has to allocate development resources to multiple business lines, including ES), and leverage the partner's market knowledge and presence. An entrant can then take advantage of already-developed platforms and functionalities as a basis for its product, and develop solutions for the specific needs and requirements of its target vertical. We consider such a strategy as Specific-Vertical, because the ES solutions developed by the entrant are designed specifically for particular verticals.

Note that these partnerships are very valuable for small entrants, as they typically provide access to high-end resources for a fixed annual fee. An entrant, however, has to go through a qualification process that determines the level of cooperation between the two partners. More advanced providers pay a higher annual fee, granting them closer relationships with large providers like Microsoft and Salesforce. Available resources range from access to code, through telephone-based account engagement, to joint-marketing efforts. Close partnerships give SMB entrants access to a rich set of benefits that can help them gain an advantage in the market. Furthermore, these partnerships offer SMB entrants a great opportunity to focus their knowledge. Rather than spending time and capital on the basics of the system, an entrant can instead build on the partner's *software development resources* and supplement them with its industry-specific knowledge and expertise.

On the other hand, such partnerships lock an entrant into a specific system developed by another provider. It is important to note that the decision to use a partner's platform, rather than develop it in-house, confines an entrant's position to that of follower. Partnership-based entry will not open up the option to challenge the dominant providers in the overall market. However, the entrant can still become the dominant provider for a specific vertical. *Industry-specific resources* in a specific vertical allow the entrant to offer a better-tailored product than the competition can. Nevertheless, such a provider would find it difficult to challenge an established ES specialist.

Large entrants

In general, holding *software development resources*, large software companies are well positioned to enter ES markets only if they can offer additional benefits that existing ES providers cannot provide. Besides a large development resource base, such large entrants typically have a brand name and a loyal customer base, and should therefore take advantage of these assets as well. For example, large entrants can leverage their resource base and expertise in developing integrated products to offer ES software that better interfaces with common non-ES software. However, we argue that large entrants, in the early stages of entering ES markets, should not invest in a vertical strategy. By making a strategic decision to develop a small number of industry-specific ES products (i.e., a Specific-Vertical strategy), a large entrant may miss the opportunity to leverage its resources to become a dominant player in ES markets. Moreover, by making a strategic decision to develop a wide range of industry-specific ES products (i.e., a Multi-Vertical strategy), a large entrant may find itself over-investing resources in a new and complex market, thereby impairing other product lines. Thus, large software companies entering ES markets should employ an Adaptable-Horizontal strategy by developing a cross-industry adaptable ES. While these large entrants should not invest in a vertical strategy, they can partner with specialized SMB providers to offer a branded, yet industry-tailored, solution. Customers for whom the cost of implementing an 'unknown' system is very high would value the option of a branded, 'less risky' solution.

Note that, while our typology suggests that certain type of providers should adopt a Multi-Vertical strategy, the above analysis suggests that a Multi-Vertical strategy is not a viable *entry* strategy. Consequently, providers that opt for a Multi-Vertical strategy should be growing towards this strategy, rather than entering with it. Before we move on and discuss growth strategies, Proposition 2 summarizes our conclusions concerning entry strategies.

> **Proposition 2**: The verticalization strategy selection of ES entrants should be determined by organizational size – SMB entrants should adopt a Specific-Vertical strategy, whereas large entrants should adopt an Adaptable-Horizontal strategy.

Growth

While the RBV has been criticized for its static orientation (e.g., Eisenhardt and Martin, 2000), the seminal work upon which it was founded recurrently sought to understand the processes of firm growth. In particular, Penrose (1959) highlighted the internal-to-the-firm motivation for growth and suggested that optimal growth involves a balance between exploitation of existing resources and development of new resources. Arguing that 'a predisposition to grow is inherent in the very nature of firms' (Penrose, 1955: 531), she aimed at identifying the internal mechanisms that cause and limit firm growth. In line with that approach, this section extends the proposed framework to incorporate growth. We examine the most valuable growth strategy for an ES provider, based on its preliminary generic verticalization strategy.

Specific-Vertical

ES providers employing a Specific-Vertical strategy focus on ES markets, and therefore have two possible growth strategies: (1) add verticals and eventually become a Multi-Vertical provider, and (2) enter a related ES market with a Specific-Vertical strategy (e.g., an ERP provider may choose to enter the CRM market). The choice between the two strategies should depend on a provider's industry-specific knowledge: the range of industries it serves, its level of knowledge of these industries, and its customer base.

Some ES providers have a long history within a specific vertical and, accordingly, comprehensive knowledge of that industry as well as a loyal customer base. Such providers would find it relatively costly to enter new verticals, as they would have to invest in learning and gaining market share in new industries. These providers are therefore better off

entering a related ES market, while targeting the same industry they have already been serving for many years. The provider could offer its current customers a more comprehensive, better-integrated solution, further strengthening its position in the specific vertical. It is important to note, however, that as such a provider grows, it would eventually have to move out of the Specific-Vertical box. The provider would then have to choose whether to enter markets other than ES markets and offer extended value to its current customers, or else develop ES solutions for additional verticals.

Conversely, ES providers that do not specialize in a particular vertical should grow by offering additional verticals. These ES providers should employ a Multi-Vertical strategy, designing industry-specific solutions in a particular ES market. The choice of new verticals should be based on a provider's available *industry-specific resources*. Note that a hasty and demanding growth process may trigger pressures to abandon true specialization in different verticals by turning to a more horizontal strategy, threatening the success of this strategic move.

To be clear, in expanding to additional verticals, ES providers leverage their knowledge in a specific ES *market* in order to enter new *industries*, rather than leverage their knowledge in a specific *industry* in order to enter other ES *markets*. Proposition 3a provides growth guidelines for providers with a Specific-Vertical strategy:

> **Proposition 3a**: ES providers that dominate specific verticals should first grow by entering related ES markets with solutions designed for the same verticals. Other Specific-Vertical ES providers should opt for gradually adding verticals in their existing ES markets.

Multi-Vertical

As suggested by our framework, ES providers employing a Multi-Vertical strategy ought to be large and have substantial expertise in different industries. Clearly, these providers should first grow by enhancing their position and gaining market share within the verticals they serve. Assuming that these providers have exhausted all of their vertical growth opportunities, they should move and enter related ES markets. Our framework suggests that these large providers should position themselves in the Multi-Vertical box in all of the ES markets they serve. However, entering a new ES market with a Multi-Vertical strategy seems to be a very demanding and risky strategy. Instead, since these providers hold *software development resources*, we suggest that large providers should enter a new ES market with an Adaptable-Horizontal strategy. Growing to additional ES markets through an Adaptable-Horizontal strategy allows a slower-paced yet better-controlled growth. Once a provider establishes a presence in the new market, the provider should further grow and move to the Multi-Vertical box, taking advantage of its *industry-specific resources*.

In sum, whereas the growth path for Specific-Verticals can be controlled by gradually adding verticals, the growth path for Multi-Verticals should be *staged*. Proposition 3b presents this logic:

> **Proposition 3b**: Multi-Vertical ES providers should grow by entering related ES markets with an Adaptable-Horizontal strategy at the first stage and a Multi-Vertical strategy at a later stage.

Adaptable-Horizontal

Our framework suggests that ES providers with an Adaptable-Horizontal strategy typically ought to be generalized large software companies leveraging their resources and capabilities in order to enter ES markets. Since, typically, these providers do not have significant *industry-specific resources*, they should consider carefully whether to verticalize their presence in ES markets. Instead, by collaborating with partners that hold *industry-specific resources* and execute a Specific-Vertical strategy, these providers can effectively respond to market demands for industry-specific solutions while maintaining an Adaptable-Horizontal strategy. Only at a later stage, after gaining substantial knowledge of the market and developing the capabilities to offer different industry-specific products, should the generalized large provider consider a vertical strategy. However, maintaining a horizontal position and building on partners to offer industry-specific solutions in ES markets seems like a more effective strategy for generalized large providers who wish to preserve their presence in multiple markets. Proposition 3c summarizes this point:

> **Proposition 3c**: Adaptable-Horizontal ES providers should grow by entering related ES markets with an Adaptable-Horizontal strategy.

Figure 3 graphically depicts the entry strategies formulated in Proposition 2 and the growth strategies formulated in Propositions 3a–3c.

Application

This paper aims at developing an exploratory framework. Therefore, we do not report on the rigorous collection and analysis of empirical data. Nevertheless, we find it valuable to illustrate the applicability of the proposed framework in ES markets using examples of different ES providers. While this illustration advances the understanding of the framework, as well as offers guidance for future research, we certainly do not intend for it to represent an exhaustive analysis meant to empirically corroborate our propositions. The illustration focuses on a major ES market – the CRM market. Gefen and Ridings (2002) define CRMs as software packages that are intended to integrate and manage all aspects of customer interactions within the organization, and so considerably improve the ability of the organization to handle customer service, sales, marketing, online transactions, and orders. The CRM market has grown tremendously during the last decade and is expected to continue growing rapidly. Frost & Sullivan (2004) project the North American market for CRM software to grow from $553 million in 2004 to $826 million by 2008. Recognizing the importance to organizations of better understanding their key customers and finding strategies to expand and maintain their customer base, CRM providers are investing

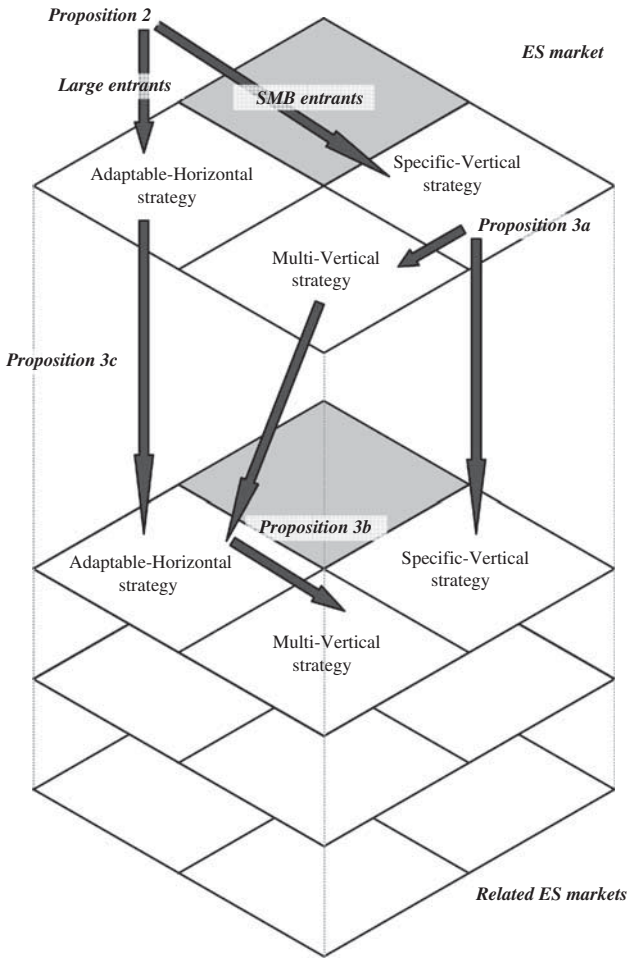

Figure 3 Entry and growth strategies of ES providers.

in providing more and more sophisticated capabilities, in addition to the basic CRM functionality of supporting marketing, sales, and customer service activities. These additional capabilities give CRM customers the ability to leverage advanced business intelligence algorithms to identify valuable patterns in customer data.

In this section, we apply our exploratory framework of generic verticalization strategies to analyze the strategies of five recognized CRM providers (each generic verticalization strategy is represented by at least one CRM provider). Our framework is based on high-level organizational characteristics: organizational size and product scope. Consequently, most of the data required to illustrate its applicability are easily available from the providers' annual reports. Taking each provider's 2004 annual report, we have collected data on the following characteristics to serve as a proxy for the provider's size: year founded, number of employees, office locations, and total revenues. Based on the criteria used by the Gartner Dataquest Guide (Gartner, 2004), firms that have less than 1000 employees and a turnover of less than $250 million are defined as SMBs, whereas firms that are above one of these thresholds are considered to be large firms.

Collecting information on the providers' product scope is a bit more subtle. While this information is available on each provider's webpage, it turned out that in some cases providers tend to overrate the scope of their business. We, therefore, supplemented the data on product scope with consulting group reports. In particular, we have gathered additional information on Microsoft and Siebel from Yankee Group reports from March and April 2005, as well as from Gartner Vendor Rating reports from May 2004 and May 2005. We define specialized firms as those for which all of their lines of business are related to ES markets. Generalized firms, in contrast, have other lines of business. Finally, in order to complete the analysis, we have also collected information on the providers' verticalization strategy. Again, in order to have accurate and unbiased information, we have complemented the information from the providers' web pages with the same consulting groups' reports, as well as with analysts' reports in professional magazines. Specifically, we have looked at reports from InformationWeek, CNet, and SearchCRM.com for a comparative analysis of the different providers. Our data are summarized in Table 1.

Specialized providers

CRM providers have mushroomed in the last few years. The number of CRM providers grew by 20 percent from 2003 to 2004 (Frost & Sullivan, 2004), with new entrants like Chordiant, Pivotal, Pegasystems, and KANA entering this market. In conjunction with entry, incumbents like SAP have expanded their products and services into new vertical markets. Our framework suggests that vertical demands should be met by providers that specialize in ES markets. The market coverage of each provider should then be determined by the provider's size. In order to demonstrate this reasoning, we study in more depth Chordiant and KANA as examples of specialized SMB providers and Seibel (now Oracle) as an example of a specialized large provider.

Chordiant

Founded in 1997, Chordiant has 281 employees in the US, London, Paris, Amsterdam, and Munich, with revenues of $85 million split 50/50 between North America and Europe. Chordiant focuses on CRM and offers solutions to meet the needs of service-driven organizations in retail banking, card services, lending, insurance, and telecommunications. Representative customers include Capital One, Chase, and T-Mobile.

KANA

Positioned as a leader in service resolution management, KANA serves customers like Palm, Sony, and Sprint. KANA was founded in 1996 and has 210 employees serving North America, Europe, Asia, Japan, and Africa. KANA's vertical solutions are targeted at financial services, telecommunications, health care, and high technology. Their revenues are in the $40-million range, all coming from the CRM market or related services.

Siebel (now Oracle)

Founded in 1993, Siebel was the first major vendor to realize the importance of creating CRM applications for individual market segments (Schwartz, 2003). Prior to being acquired by Oracle in September of 2005, Siebel

Table 1 Providers' high-level characteristics

Firm	*Founded*	*# of employees*	*Offices*	*Revenues (millions)*	*Product scope*
Chordiant	1997	281	US and Europe	$85	CRM only
KANA	1996	210	North America, Europe, Asia and Africa	$40	CRM only
Siebel (now Oracle)	1993	>3,000	Global	$134	CRM only
IBM	1911	>300,000	Global	>$96,000	Software, hardware, services, and financing
Microsoft	1975	>57,000	Global	$36,800	Software

employed more than 3000 employees and had more than 80 offices in more than 30 countries worldwide. Siebel had, in 2004, revenues of $134 million, coming from serving more than 4000 customers such as AT&T wireless, Deloitte, Honeywell, and HP. Siebel's vertical solutions covered many industries: automotive, high technology, oil, retail, financial services, life sciences and the public sector, among many others. Siebel focused on the enterprise software and solutions market, offering a wide array of products and services.

Discussion

All three providers specialize in CRM markets and do not have other lines of business – all three are similar in terms of scope. Nevertheless, they differ significantly in terms of size: Chordiant and KANA are categorized as SMBs and Siebel is categorized as a large business. The providers' information above clearly demonstrates that differences in scale affect the verticalization strategy adopted. Siebel's large scale allows it to cover, more or less, the entire market – as a horizontal strategy would – but with many different solutions tailored to the specific needs of customers in many different industries. Thus, its strategy is a Multi-Vertical one. In converse, Chordiant and KANA have a much smaller scale and therefore choose a more niche strategy, developing solutions that target specific industries – a Specific-Vertical strategy.

Generalized providers

In recent years, there has been a growing demand in the CRM market for industry-specific solutions. However, our framework posits that some providers are better off with a horizontal strategy (just as some customers are better off with a horizontal solution). IBM and Microsoft demonstrate this position.

IBM

Founded in 1911, IBM has been known as a leader in the hardware and software markets for many years. When the CRM market started growing, IBM entered this market, mainly offering services (consulting, integration, software hosting). IBM's strategy has been to use CRM software by partners (e.g., KANA, SAP, SAS, Epiphany, Oracle) and integrate it with horizontal platforms from IBM.

Microsoft

The largest software company in the world, Microsoft was founded in 1975 and currently employs more than 57,000 employees. Microsoft's total revenues of more than $36.8 billion come mainly from desktop software, server software, and consumer electronics. Microsoft offers a horizontal CRM solution, where vertical segmentation is done by certified independent software vendors.

Discussion

The same pattern is apparent in both examples above: large scale and large scope providers leverage their brand name and market dominance to serve the growing CRM market as well. The expertise of both providers originates in software and service markets other than CRM. Consequently, employing a Specific-Vertical or a Multi-Vertical strategy in ES markets does not fit their organizational characteristics. Thus, IBM and Microsoft provide horizontal platforms of which other, more specialized, providers can take advantage. Such partnerships are beneficial for both sides. On the one hand, they allow Microsoft and IBM to offer a more customized CRM solution and thus survive the verticalization trend. On the other hand, small providers can offer a brand name solution tailored to specific industries. Furthermore, IBM and Microsoft can still offer a horizontal solution to organizations in need of such a solution (e.g., multi-business organizations). Microsoft's horizontal CRM product (Microsoft Dynamics CRM) is an example of a horizontal strategy executed by a generalized large provider.

Implications for professional practice

Our framework of generic verticalization strategies has important implications for ES providers, in particular, and for providers of software solutions, in general. Given a certain level of resources and product scope, choosing the best-fitting verticalization strategy can maximize the potential benefits to providers and enable a superior competitive positioning in the market. When the verticalization strategy pursued is more ambitious than the strategy suggested by our propositions – for instance, a generalized large provider that employs a Multi-Vertical strategy – we expect some level of under-investment, because the provider does not have the resources to capitalize on the chosen strategy. Conversely, when the verticalization strategy adopted is narrower than the strategy suggested by our framework – for example, a

specialized large provider that settles for a Specific-Vertical strategy – the probable result is missed opportunities and foregone profits, as the provider does not exhaust all of its resources. In order to better demonstrate this latter point, Amdocs' strategy is proffered as an example.

Founded in 1995, Amdocs employs more than 10,000 employees. Amdocs focuses on offering billing and CRM solutions to the global telecommunications industry. Although Amdocs may be categorized as executing a Specific-Vertical strategy, because of its focus on specific industries, we categorize Amdocs as having an Adaptable-Horizontal strategy for the CRM market, given that its CRM solution (originally developed by Clarify) was not designed for specific industries. In terms of organizational characteristics, Amdocs is a specialized large provider. Therefore, our framework suggests that Amdocs should pursue a Multi-Vertical strategy. Amdocs' focus on enterprise applications and its substantial *software development resources* ought to enable it to provide vertical solutions to a wide range of industries. Amdocs, however, striving to bring together its application portfolio in order to offer customers an integrated customer management solution, seems to invest its resources in customizing its CRM product to specific needs and requirements in the telecommunications industry – instead of designing additional industry-specific products. Our framework suggests that Amdocs may find considerable benefits in a strategic decision to expand its product line to additional vertical solutions. Entering the CRM market with a horizontal strategy was a warranted strategic move, but Amdocs should turn to a Multi-Vertical strategy for this market to capitalize on its potential.

Note that while the framework identifies a preferred verticalization strategy for each ES provider, this strategy relates to a particular ES market. A provider may adopt different verticalization strategies for different product markets it serves. For example, SAP, one of the world's leading software companies, seems to execute such a 'mixed' vertical strategy. Being a key player in both the ERP and the CRM markets, SAP employs a Multi-Vertical strategy for its ERP market in conjunction with an Adaptable-Horizontal strategy for its CRM market. While our framework does not analyze directly such a case, SAP's strategy is in line with our propositions. SAP started as an ERP provider, and therefore most of its resources have been devoted to ERP products and services. SAP's aggressive investments in the ERP market enabled it to verticalize its ERP products, taking advantage of *industry-specific resources* acquired in the development process. Leveraging its brand name and capabilities in one ES market, SAP was able to enter the CRM market as well. Since the CRM market is a 'secondary' market for SAP, with a lower level of investment, the firm is better off employing an Adaptable-Horizontal strategy in this market. Nonetheless, growing rapidly, SAP can naturally move towards a Multi-Vertical strategy in the CRM market in the near future. SAP's case further exemplifies our analysis of entry and growth strategies: specialized large providers like SAP should grow by entering related ES markets with an Adaptable-Horizontal strategy (leveraging *software development resources*) at the first stage and a Multi-Vertical strategy (leveraging *industry-specific resources*) at a later stage (see Proposition 3b).

The discussion in this section highlights two noteworthy limitations of the proposed framework. First, the framework is based on a categorical distinction between vertical and horizontal strategies. This distinction is obviously simplifying in nature, because a vertical–horizontal *range* may be more realistic than a vertical–horizontal dichotomy. Furthermore, it can vary across product lines within a given firm. Consequently, our framework gives clear guidelines only at the product level. An organizational-level analysis is beyond the scope of this paper. Future research can extend the proposed framework by examining how providers should integrate their verticalization strategies across product lines and markets.

Second, the framework suggests that organizational characteristics should determine a provider's verticalization strategy. While we typically expect strategic decisions to depend on existing organizational characteristics, the causality can run the other way. For example, an ES provider may first decide on a Multi-Vertical strategy based on the identification of different needs and requirements in different industries, and then act to narrow its product scope and enlarge its resource base to support such a strategy. This reversed type of relationship should be more evident in new entrants, who find it easier to first formulate a market strategy and then decide on the organizational scope and size that would best execute that strategy.

Whereas this discussion has focused on the move of the CRM market towards verticalization, there are other important changes taking place. The risk and large upfront cash required to implement a CRM system has pushed the market towards a 'subscription' model and away from a traditional licensing model. Instead of hefty deals for perpetual licenses to CRM software, many enterprises are opting for so-called 'on-demand' CRM agreements that require less upfront cash in return for use. On-demand applications consist of software maintained away from a customer's physical premises by a provider who oversees management of the applications and the data. This hosting model can involve a monthly fee, rather than an upfront payment for software licenses that usually stretch for several years. That is, on-demand CRM offers customers numerous advantages over traditional models, such as increased flexibility, faster installation, and lower total cost of ownership. The disadvantages mainly come from the risks involved in the externalization of strategically important data and processes. According to IDC researchers, the overall on-demand software market is expected to grow to $4.8 billion in the US alone by 2009, driven by a 28 percent annual compound growth rate (Hines, 2005).

While this paper focuses on ES providers whose business model is primarily based on selling software products, the proposed framework may be applied to on-demand markets as well. Because the analysis does not relate to the implementation process itself, applying the framework to ES providers who follow an on-demand business model is straightforward and does not require any additional assumptions. Future research may explore the validity of the proposed framework across various business models in ES or other software markets.

Theoretical contributions

Beyond offering practical guidance to decision-makers, this paper makes numerous significant theoretical contributions. First, the exploratory framework is developed drawing upon the information systems, strategic management, and marketing literature. This demonstrates our conviction that research targeted at explaining and predicting the market behavior of enterprise software providers cannot be confined to the theoretical boundaries of a single management area. The information systems literature is imperative, because the framework is developed in the unique context of software markets, where the players are software developers. However, we believe that the strategic management and marketing literature is also vital for the analysis as the framework aims at analyzing strategy formulation based on market segmentation. Our framework, therefore, presents a comprehensive illustration of how different theoretical perspectives from different areas of management can be integrated to explore a practical situation in contemporary markets.

Second, this paper applies the RBV and the dynamic capabilities perspective to describe the mechanisms underlying the link between verticalization strategies and competitive advantage. While information systems research has applied the RBV rather extensively, it has typically been used to explain why particular technological resources can provide a basis for competitive advantage. This approach is extended in this paper by associating RBV with related theory (knowledge-based view and dynamic capabilities perspective) in a comprehensive theoretical account of the relationships between firm resources, product strategies, and competitive performance.

Third, the software market analyzed in this paper is complex, competitive, and very dynamic (not to mention the centrality of this market among today's industrial software markets). Developing an exploratory framework that can account for the multitude of strategic alternatives ES providers face is an extremely challenging task, which requires a multi-faceted approach. Our framework is versatile in the sense that it has both a static facet and a dynamic facet. It starts by developing a typology of available strategies and analyzing the relationships between organizational characteristics, resources, and strategies. It then moves to discuss the trajectories required for successful entry and growth. While theory development many times does not evolve beyond the static view (e.g., the RBV), this paper acknowledges the importance of adding a dynamic view to frameworks developed to account for market behavior in high-velocity business environments.

Finally, the existing literature is very limited in its ability to offer theoretical frameworks that can account for the dynamics of industrial software markets. Considerable literature exists to aid organizational customers in their decisions about IT investments. There is also significant literature to assist software developers in implementing efficient and effective development processes. However, this is not the case when it comes to providing guidance about software product strategies. There is little conceptualization about the product strategies available to software providers generally, and to ES providers specifically. We believe that advancing this area of research is the main theoretical contribution of this paper.

Conclusions

In recent years, ES markets have been very dynamic, as the customers of enterprise-wide solutions have become more and more demanding. Whereas, given the complexity of ESs, a standard, non-adaptable solution was considered adequate only a few years ago, contemporary customers are increasingly seeking solutions that require less and less customization and implementation effort. Given the lack of conceptualization and empirical evidence in the literature that explore the segmentation of ES markets, this paper contributes by offering an exploratory framework that identifies the primary generic verticalization strategies, matches organizational characteristics of size and scope with the most effective verticalization strategy, and analyzes strategies for market entry and growth.

We claim that organizational size and scope should guide ES providers in their preliminary decision of which verticalization strategy to adopt. Vertical segmentation is an effective strategy for providers that specialize in ES markets, where SMB providers should pursue a Specific-Vertical strategy and large providers a Multi-Vertical strategy. This path, however, is less effective for generalized providers with many other lines of business. These providers should not conform to this market trend, but rather stick to a horizontal strategy.

Despite the investment, complexity, and risks involved in implementing information systems that are designed to support multiple business processes, ES markets are expected to expand considerably in coming years. This paper suggests that key players in these markets, as well as new entrants, should make sure that the verticalization strategy they formulate and execute is aligned with their organizational characteristics and strategic resources. A failure to do so may put those ES providers in inferior competitive positions.

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