# Customized ERP System:
# An Alternative Solution for
# Small and Medium Business Firms

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**Abstract**  As business needs are accelerating exponentially due to globalization and other market forces, companies regardless of its size need data which can operate flexibly and rapidly across disappearing physical and organizational borders. To meet the growing Enterprise Resource Planning [ERP] needs for small and medium sized firms, large ERP vendors have introduced new and inexpensive products to these markets. They can customize to businesses of all sizes as long as they have the need for the services and the budget to support the system. Based on the observations in this research, most ERP vendors, regardless of their size, are now focusing more on improving the implementation curve and reporting capabilities through compartmentalizing business applications along industry verticals.  Also ERP systems are becoming more open thereby consultants and subject matter experts now have the opportunity to create modules based upon verticals to form a best-of-breed ERP implementation. of enterprises.

**Key Words :** ERP(Enterprise Resource Planning), Customized ERP for SMB, ERP Vendors, SMB ERP Market Trend, "Little' ERP

## 1. Introduction

Enterprise resource planning (ERP) is a system to integrate two or more of the processes and databases that firm implements on a daily basis. This integration allows for smoother functioning in areas like scheduling, workflow management, quality control, inventory, human resources, and customer service.  Some firms choose to create an in-house ERP system to meet their need. However, the majority purchase components of their ERP system from one or more vendors.  The needs of the firm determine which ERP components to implement, but the size of the business normally determines which

vendor is used and what products are available. Different ERP products are available to medium and large businesses. In the past, ERP systems were implemented mainly in large firms and not so much in small and medium sized businesses (SMB).

There are different opinions of how big a medium sized company is. According to Wikipedia, a medium sized company was previously defined as having 500 employees in Germany, but only 100 in Belgium (Wikipedia, 2009). The European Union has since standardized this definition so that a company with 250 or fewer employees is considered medium sized.  In the United States, however, medium sized firms are defined as having 500 or fewer employees (Wikipedia, 2009). Firms larger than 500 employees are therefore defined as a large business. Businesses with 500 or more employees are

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numerous. Currently in the United States alone, there are over 37,000 businesses that meet the definition of a large business (US Government, 2009). These are the users of 'Big ERP' system. There are also over 86,000 medium sized firms with between 100 and 499 employees (US Government, 2009). These are the users of 'Little ERP' system, and these numbers demonstrate that there are huge market potentials of ERP products for SMB firms.

The SMBs employ more than half of the US workforce; create more than two thirds of the private sector jobs; and generate more than half of the total economic output (America & China, 2009). However, SMBs face several challenges today. Changing customer demand, large local and global competitors, and fewer resources are some of the issues they are facing. Moreover, increasing globalization places greater demands of ERP system functionality of operations (SAP, 2009a). By using the right IT(information technology) and understanding how best to use its abilities, SMBs may be able to cope with some of the difficulties they face. Yet, according to Industry Week, 14 percent of SMBs have no ERP systems, 20% of them have systems that are more than 10 years old, and 31 percent have systems between 5 and 10 years old (Industry Week, 2007). In addition, some firms are still running their entire businesses on Excel spreadsheets which can result in excess time waste and effort, while delivering inaccurate information.

This research examines the ERP systems available to large and SMB firms today. It provides a review of existing systems and ideas of how they can support SMB firms. The rest of this paper describes key proprietary software products based on a variety of criteria (e.g., scalability, flexibility, etc.) and future direction of the ERP systems from those observed criteria.

## 2. Products for Large vs. SMB Firms

### 2.1 Products Available to Large Firms

ERP products that are marketed to large firms are usually highly customizable. Large firms have complex needs and deep pockets, making a potential sale very attractive to most of large ERP vendors. While some large firms choose to build their system in-house, the majority will turn to ERP vendors for their IT solutions. The following is a sampling of ERP vendors that offer products and services to large firms.

1) SAP Business Suite ERP : SAP ERP supports the areas of Finance, Human Capital Management, Operations, and Corporate Services. It focuses on comprehensive integration and organizational collaboration, which are vital to firms that need to adapt to changing industry requirements. SAP and Microsoft have a new joint product called Duet, which integrates SAP ERP with Microsoft Office productivity tools (SAP, 2009b).

2) Oracle E-Business Suite : The ERP portion of Oracle E-Business Suite offers applications for Financial Management, Human Resource Management, and Project Management. However, a prospective customer can choose to integrate these ERP functionalities with any number of the other enterprise applications Oracle offers. It's products are adaptable and customizable, providing an end-to-end solution for large customers (Oracle, 2009a).

3) Infor ERP Baan : ERP Baan is an advanced solution designed to specially support complex manufacturing requirements. The system features multi-plant business process modeling, and the product is scalable and in multi-languages. Large manufacturing firms can lower their IT costs by choosing Infor ERP Baan (Infor, 2009).

4) JDA Solutions : JDA offers several business

solutions for Supply and Demand Optimization, Transportation and Logistics Management, Contract Manufacturing, and Revenue Management. These and other solutions can be used individually or together to provide a comprehensive, integrated business solution. Their customers tend to be large retail, manufacturing, and wholesale- distribution firms (JDA, 2009).

## 2.2 Products Available to SMB Firms

The SMB sized firms generally do not have the budget for ERP that large firms have. Medium sized firms "…have limited data on which to assess their performance, take longer to produce management reports, and wind up with only average or below-average accuracy" (Kugel 2007). However, this does not mean that they cannot afford to integrate at least some of their work processes and databases. According to Kugel (2007), SMB firms may benefit the most from an integrated solution. With advances in technology and declining costs of processing power and data storage, even SMB firms can afford the software that is available. The following is a sample listing of the products currently available to SMB firms.

1) Microsoft : Microsoft offers four ERP products for SMBs.

· Microsoft Dynamics GP 10 - It provides scalable financial and operational functionality such as business intelligence, robust reporting, forecasting, and budgeting for SMB firms. (Microsoft, 2009a).

Microsoft Dynamics AX 2009 - It has multi -language and multi-currency capabilities; thereby it is an ideal solution for multinational organizations that want their divisions to share information for their business processes. This provides Supply Chain Management (SCM) such as Radio Frequency Identification (RFID), manufacturing, distribution, and advanced inter- company functionalities to

medium sized firms (Microsoft, 2009b).

· Microsoft Dynamics NAV5.0 - This provides SCM(including manufacturing and distribution), financial management, customer relationship management (including marketing, sales, and service management), business intelligence, and e-commerce functionalities for SMB firms. (Microsoft, 2009c).

· Microsoft Dynamics SL 7.0 - This provides flexible solutions and operational functionality for project-oriented and distribution-driven SMBs. In addition to including functionalities for finance, manufacturing, payroll, field service, supply chain, analytics, e-commerce, and project -accounting, it enables employees to perform complicated accounting tasks from a single interface (SAP, 2009c).

2) SAP - SAP offers two ERP products for SMBs.

· SAP Business One - This is a low-end suite targeted at small firms with less than 250 employees. Designed particularly for small businesses, BO provides a single software management application that helps to run the entire business including financial management, purchasing, inventory management, customer relationship management (CRM), e-commerce, human resources, sales, and distribution - all in a single system. (SAP, 2009c).

· SAP All-In-One - This system targets growing SMB firms. As a company expands, it needs to improve its processes as well. SAP's solution helps streamline and automate processes, makes it easier to adapt to changing business conditions, and improves customer and supplier relations (SAP, 2009d).

3) Oracle E-Business Suite : Oracle re- designed their large ERP system specifically for SMB firms. The smaller version contains the same business applications that its higher- end ERP product offers. It not only includes ERP but CRM and SCM. It can be integrated with existing applications and

hardware, has industry-specific functionality, and can be implemented easily (Oracle, 2009b).

4) SAGE : The Sage Group supplies business management software and solutions to 5.5 million SMB firms worldwide. Sage has a strong focus on customer service and offers products tailored to local markets. In North America, Sage Software has many different products to meet their customers' needs. MAS 90 ERP and MAS 200 ERP offer "a broad selection of feature-rich solutions", while MAS 500 ERP is a fully integrated solution for automating all areas of business management (Sagesoftware, 2009a).

5) Lawson M3 and S3 : Lawson provides software and implementation services to over 4000 medium to large sized customers. Their M3 line of products is marketed to product- centric businesses that "make, move, and maintain," while their S3 applications are designed for those that "staff, source, and serve" (Lawson, 2009). Lawson has been compared with large vendors such as SAP, Oracle, and PeopleSoft, and was found to have the lowest total cost of ownership per user (Roberts, 2007).

6) JD Edwards EnterpriseOne and World : JD Edwards EnterpriseOne offers a comprehensive solution that is compatible with a number of databases, operating systems, and hardware. JD Edwards World, on the other hand, is built for the IBM iSeries platform. Both advertise a low total cost of ownership and Oracle's Lifetime Support, both of which are attractive to medium sized firms (Oracle, 2009c).

7) Epicor Products : Epicor is chosen as one of the smaller vendors to discuss because of the comprehensive nature of its software package. Epicor has about 2,100 employees and serves over 20,000 customers in 140 countries. Epicor products include 'Enterprise' and others that provide a comprehensive suite of financial management,

supplier relationship management, SCM, project management, service management, and CRM.

8) NetSuite Product : NetSuite is one of the leading providers of on-demand ERP and CRM application software. As an on-demand, web-based software, there is a significant reduction in the total cost of ownership. The accounting and ERP software modules are tightly integrated, supporting all back-office processes as well (Coreen, 2006).

9) Software as a Service [SaaS] : This service is subscription-based, and customers access the applications via the Internet. It is a relatively new concept for users who does not want to implement on-premise ERP system. SaaS products are generally marketed to SMB firms, but any company can take advantage of the services that are offered. The following are some of the SaaS products that are available (Weier, 2007).

· Workday Enterprise Business Services - This system mainly targets customers with revenue of between $500 million and $2 billion. There are no large upfront license fees or maintenance investments, the implementation time frame is shorter, and there are no complex and costly upgrades. (Workday, 2009).

· SAP Business By Design - Like SaaS offerings, this product is intended to reduce IT costs for firms by providing the product online. To address concerns with security and availability, SAP provides off-site data backup (SAP, 2009e). It has been designed using four principles - completeness, adaptability, ease of use, and cutting cost of ownership (SAP, 2009f).

· Sage Accpac 5.4 - This system offers flexible deployment options so it can be used on the web, desktop, or both (Sageaccpac, 2009a). Its modular structure, customizable screens and fields make it easy to modify the software to meet specific business requirements. Moreover, it is available in multiple languages and multi-currency that is

designed to satisfy demanding international requirements (Sageaccpac, 2009b).

10) Open source ERP Suppliers : In the SMB segment, open-source ERP alternatives are gaining ground. Solution providers are turning to this low cost alternative to have full control over the software. A majority of ERP's high implementation cost goes toward the consultants customizing the commercial software for business operations. On the other hand, open-source ERP permits the customization to be accomplished in-house, while avoiding hefty software licensing fees to boot. The following vendors offer open-source ERP software:

· Apache OFBiz - This offers a great functionality in order management, warehouse management, accounting, manufacturing, advanced e-commerce, and much more. OfBiz can create customized applications that can be readily used by the businesses. In addition, the design is flexible (Open for Business, 2009).

· OpenMFG - This provides a comprehensive ERP solution for SMBs including modules for manufacturing, sales, inventory, product, CRM, schedule, purchase, and accounting. It is built on PostGre SQL, so solution providers do not have to write codes to integrate it with other applications. It also comes bundled with OpenRPT to generate reports (Openmfg, 2009).

· Compiere - This is an out-of-the-box ERP that provides purchasing, manufacturing, materials management, order management, sales, point of sale, financial management, and e-commerce functionalities. It also uses a model driven architecture to change the application and add new features (Compiere, 2009).

Among these dozens of ERP and related systems, the market share between 'Little' and 'Big' ERP systems is changing. Microsoft is leading the ERP market among other 'Big' ERP vendors not in license sales revenue but in 'technical support' or

'customer satisfaction' field. According to CRN, "Microsoft is the technology company to beat in SMB ERP." In terms of 'overall technical satisfaction', Microsoft was rated the highest at 84.6%. On the other hand, Oracle, SAP, and SAGE were rated as 77.9%, 74.4%, and 72.7% relatively. Microsoft ranked the highest in terms of 'programs and support'. The criteria evaluated were pre- and post-sales support, technical education resources, and program consistency. The ratings were Microsoft 81.6%, Oracle 70.8%, SAP 70.6%, and SAGE 69.1% relatively. In the area of 'financial criteria' such as service rates, rebates, and margins, Microsoft won the highest ranking, followed by Oracle, and third by SAP and SAGE (Darrow, 2007).

If this trend continues, the competitive playing field among all ERP vendors will begin to be leveled in the next few years. According to AMR Research, the ERP market is showing a slight but normal slowing in 2008 spending: "Survey data indicates that for large firms with 1,000 or more employees, ERP budgets will have an average growth of 5.4% in 2008. When compared to last year's projection for budget increases of 12.3% for firms of all sizes, the current 2008 projection is a reasonable scale for large enterprises - many of which have already standardized an ERP package for core financials and are now expanding that footprint to include other functionality, such as manufacturing operations support and CRM." This indicates that the ERP market for larger firms have been reached its maturity stage. On the other hand, the ERP market for SMB firms starts to open up since advancements in technology as well as decreased costs for storage space are helping to reduce the overall resources required for SMB firms to complete ERP implementation. (McGreevy, 2007).

## 3. Trend of 'Little' and 'Big' ERP

Based on the current ERP market trend, it is going to be very important to ascertain whether 'Big' ERP vendors will be able to scale-down their system to handle the needs of SMB firms that is most likely running much fewer business processes and transactions compared to a much larger company. According to the common knowledge, this shouldn't be a problem; if a baseball player can play in the major leagues, then why shouldn't he be able to play in the minor leagues? Some ERP vendors may be providing ERP and service to large firms whose processes and level of transactions may be closer to that of SMB firms. Furthermore, some vendors may already be serving SMB firms in one way or the other. However, that doesn't necessarily mean their ERP system implementation for SMB firm is successful.

The 'Big' ERP vendors must make the necessary adjustments to their ERP system, so that it can effectively and efficiently run for SMB firms. Some of the desperate 'Big' vendors offer deep license discounts, provide low-cost financing and proclaim that their ERP system in fact improves business processes and productivity (Kanaracus, 2009).

The key to penetrate the SMB market for the 'Big' vendors is to unify and deliver appropriate data to the right individuals and do so in a real time manner. In order to achieve this objective and to gain market share in their respective environments, the ERP system should be customized in a Service Oriented Architecture (SOA) environment and must address three key issues as below.

### 3.1 Fit to the Business

The solution must fit the business. The solution must provide best-practice knowledge which the business can grow into. For instance, while there

are some similarities between two companies, a large pharmaceutical company operates differently from a car company and needs a different ERP system. Employees and management will not support the product in the long run. This is typically termed as an "all or nothing implementation" which most firms shy away from. To address this, more vendors are pressing for open modularity in ERP applications. As with ERP, components and organizational units can be added to the system as it needed. However, many times these components are generic to a particular industry or an organizational unit and require extensive customization. Microsoft's Dynamics AX takes a different approach by creating a platform which consultants and entrepreneurial Subject Matter Experts can program modules based upon their vertical industry knowledge. This type of 'last mile' approach (the final leg between communications service providers' facilities and their customers) allows firms to pick and choose a best of breed solution to fit their needs at the business level as needed.

Oracle on the other hand, is content to acquire firms as a closed set of modules. The Oracle allows Microsoft to use its existing base of Microsoft Solution Providers to grow its market share but makes the selection process more reliant upon consultants. In addition, older workers who have worked with legacy systems will be tapped to provide expert knowledge of migration and process. These new ERP applications will capture process knowledge in ERP Expert Systems capable of running Monte Carlo simulations (Lead time, Capacity Planning, consumer demand) to leverage a skilled workforce.

### 3.2 Inter-connectivity

The inter-connectivity between dissimilar business

units must be created. In the past few years operations have still occurred in a siloed environment. Data permissions or legacy systems / thinking keep the data bottled up in a division. The solution must be able to "talk" with other environments to share data. In addition, these communications may have to interact with different business rules.

The maturity of XML (eXtensible Markup Language) and Web Services (application layers using XML) are allowing the ERP applications to tap legacy and heterogeneous systems. A Web Service can be built on the top of legacy systems such as Fortran or Cobol mainframes, and business rules developed internally to pull the information out into an ERP system. Information is pulled through the popular Java and .NET programming languages allowing for organizations to find IT resources to support implementation. For Oracle and SAP, these XML Web Services take the form of custom applications which must be developed on other company's application platform (e.g. Microsoft or IBM). For Microsoft, however, the application and the development processes are already part of the Microsoft family.

### 3.3 Reporting and Analysis where you are

The new global economy has demanded that the solution must provide relevant information when and where business demands. These ERP systems must reside in an environment where they can be used to their full effect. The increase in mobile devices and flexible work environments call for the use of a portal based application environment which can be customized to the business. This is in contrast to the client-server applications of the past decades. A business user can load up any web based browser from their device and access their system.

This change to a web based environment will also allow entry vendors to address the small and medium size market. The ERP vendors such as Intacct and NetSuite charge monthly rate fees. There are even home built free web based ERP systems. Additionally, appropriate reporting and analytics will also play a key role in the ERP system. These have been typically static and required some IT resources to configure. The new applications from vendors such as Cognos and Microsoft allow flexibility to the business user.

With a user interface and reporting within the user's grasp, the business user has the power to affect their own environment and therefore adoption of the tool. This analysis capability will be driven by best practices for business reporting by knowledge experts.

As ERP system is now moving towards an "open" and user friendly system bringing all under a homogeneous environment of inter- connected heterogeneous systems across an organization, its franchisees or branches and affiliated partners wherever in the world they reside. Picture a business user to start from a single application program accessed by any device (thick, thin or mobile client) anywhere in the world. The system user can find data about any aspect of the business pertinent to their needs.

For example, if the user is interested in how the new Korean partner's operations are going, the user taps into the performance data shared between companies through the same interface. Shipments from the partner meant for Osaka, Japan have been automatically rerouted to Paris as their warehouses have gone empty and demand is forecasted to be hot. Meanwhile the company's back-end systems are churning away creating forecasting models and trafficking data to and from other business stake-holders and providing the business user relevant and actionable information; the business manager becomes an empowered decision maker

rather than a data pusher in real time within an integrated metrics driven organization. With flexibility of the open system, SMBs will have the option to select among many ERP systems and choose the right one that will fit in their business processes. This is the power of the real ERP system – empowering the business user and allowing them to adapt and grow with the product.

## 4. Trend of the SMB ERP market

### 4.1 Overview

The successful ERP implementations for SMB also involve huge capital investments, long implementation times, significant IT resources and intense cultural change just like larger scale of the ERP implementation. According to recent Aberdeen Group survey data of 920 SMB firms, the average SMB ERP implementation takes 10 months, though the complete installation requires on-site visits long after the go-live process. The capital investment costs nearly $300,000 for ERP software and services for SMBs with less than $50 million in annual revenue. The larger scale of SMB (revenues between $100 million to $250 million) will spend $1.4 million (Wailgum, 2009). These capital and time factors can be significant factors for SMB when they start to implement the new ERP system.

Although many 'Big' ERP vendors have provided their ERP system more optional and functional for SMBs, there are many examples of implementations failed and not centrally controlled. Most of the SMB found themselves using applications which met their needs but were not able to be integrated with others. For instance, Human Resources would buy a PeopleSoft application while Accounting would be using Lawson, and Manufacturing would be using a self-built application. Sharing of information was

typically bottle-necked still at the human level. Due to the tremendous amount of integration time needed and the cost of employee training, these ERP system projects may fail.

However, recent Forrester surveys reveal that SMBs are justifying new or additional capital investment. About 83% of SMBs believe that the ERP improves the efficiency of core operations and business processes, and 80% of SMBs believe that ERP improves workforce productivity. Additionally, 75% of SMBs believe that software improves the quality of products and services (Wang, 2007).

Which type of the ERP system fit the needs of the business processes of the SMBs? Many SMBs used to rely on easier and cheaper ERP investment alternative such as software-as-a-service (SaaS). However, about 60 percent of SMBs are not at all interested in SaaS due to concerns about integration, security, total cost, performance, and lack of customization. About 63 percent of surveyed users prioritize improving integration between applications as the main reason for their investment. Specifically, SMBs want tangible benefits of system integration, inter- operability, and standards rather than service- oriented architecture (SOA) (Wang, 2007).

This research seems to suggest that the SMBs are willing to invest on the ERP system if it improves business processes integration. But, most of the SMBs remain comfortable adopting a "wait-and-see" approach. The SMBs that adopt this approach see both positives and negatives in ERP implementation. They are willing to give every attention to the ERP investment and implementation activity but do not participate. They also rely on their ERP investment decision on peers and not vendor hype for purchasing information. However, they need to understand the balance of power in the ERP market has shifted, with ERP market is definitely a buyer's market in 2010.

Although there is no textbooks which address which 'Little' or 'Big' ERP system provide the perfect system integration for any particular SMB firm, virtually all of the ERP vendors, no matter the size, have some ERP system that are geared to SMB firms. If it hasn't already happened, those SMBs that adopt "wait-and-see" will soon be deep in conversation with their senior IT executives about budget and ERP spending in general. Depends on how much ERP investment budgets will be allocated, the ERP system will provide great return both now and in the future if they find the proper customized ERP system (Stuart, 2009).

## 4.2 Analysis

Once SMB owners understand the future of the ERP system or emerging technologies, they need to address two issues for their ERP implementation. The first is whether the business itself would require the sophistication of ERP system. The second is to identify the ERP system that fits for their budget and the ability for them to implement the system.

First, some SMB firms' business processes and operations may be simple enough to not require, nor even be able to use ERP system. The basic idea behind ERP implementation is to improve the business processes to run smoother regardless of its shape or size of the firm. However, there are some firms out there that are already operating at 100% efficiency without ERP system, and no amount of sophisticated IT solution can improve the business any further. Even if the level of efficiency is not 100% – it rarely is – the level may be acceptable by the business owner and they may find that the cost and risk of implementing ERP may outweigh the benefits, so the SMB firm is better off without it.

If they decide to implement the ERP system, not just any ERP system will help them to be competitive. Not only are there several vendors offering a variety of products and services, but also these products are made up of several interrelated modules. These factors make it difficult to select the product that best meets the business requirements. Medium to large sized firms will have clearly different needs when it comes to choosing an ERP solution. Some need a new system to replace legacy systems that can no longer be supported, some choose to standardize processes across multiple sites, and some plan to use the new system to improve operational processes (Olson, 2004).

It wasn't until recently that these SMB firms could really take advantage of the functionality since there are numerous ERP systems available to them. As ERP vendors grow and create more products, many are beginning to offer ERP systems to both SMB and large firms. The offerings range from simple to complex, with price ranges that can fit into almost any budget. A large company requiring a lot of customization can often find suitable solutions from a vendor that also provides "out-of-the-box" or "on-demand" services to midsize customers. Likewise, if a SMB firm wants a robust ERP system that can integrate all of their systems and processes, that type of product is now available to them if they have the budget.

If any firm has the budget to spend on the ERP system, it is easier for an ERP vendor to prove itself to a group of larger firms who have a large enough budget to easily swallow the cost of an ERP implementation. But it is quite different to prove itself to a group of SMB firms who may be risking it all by taking a chance with an ERP implementation. The ERP vendors will have to prove to SMB firms that the benefit does outweigh the cost, and they'll also need to make ERP packages and implementations affordable for the

smaller budgets of SMB firms. On the other hand, SMB firms should carefully evaluate whether any sort of price discounts, warranty policies and/or better technical support are available to increase chances of success in their ERP implementation.

The last issue to consider when examining the ERP system that firm wants to implement is the people who are involved during the implementation. Identifying the level of complexity of the ERP system must be taken into consideration since it relates to the employees who are behind the implementation. Any changes to the new information system could potentially do the opposite of its goals if the employees using it do not understand it, and are unable or unwilling to adapt to the use of the system. Some of these employees may have spent years learning the system that they're currently operating on, so the effect on their job and their attitude toward using a new system must be looked at.

These three issues mentioned above made SMB firms to be averse to spending on the ERP system. However, new development in future technology on ERP system unleashes the full potential of cost effective 'User friendly ERP' system. With the emergence of the Internet and XML, EDI improves 'Inter- connectivity' of the partners and has become cost-effective to all. User friendly ERP system will improve the chance of success on ERP implementation because it can make your employees more productive and in turn, more successful. It makes the ERP system usability simple even for those employees who have limited computer skills. A user friendly ERP system can help your company to improve communications, operational performance and productivity. Conclusively, the size of the firm or the amount of budget now no longer dictates what ERP system or which vendor that they should implement or adopt among all ERP systems available.

## 5. Conclusion

This paper has evaluated several vendors that providing ERP systems for large or SMB firms. While the market for SMB has been dominated by Microsoft lately, historically there have been six leading 'Big' ERP systems, followed by some mid-size vendors. Finally there are 'Little' vendors which really focus on the SMB firms. The technical improvement in ERP system has been occurred as flexible components focused on industry verticals.

This will bring expert knowledge to provide quick implementation, customization, and bring best-of-breed procedures to an organization. SAP and Oracle will continue to dominate the larger firms and will offer paired down versions of their own software to SMB firms in reaction to Microsoft's entry. However, Microsoft and ERP Application Service Providers will grow their market share substantially filling the ERP gap that has existed for forty years. With better ERP technology, Microsoft's existing server base and integration with Microsoft office products will begin to erode the three primary ERP makers' share.

Although there is no crystal ball into which 'Little' or 'Big' ERP vendor can gaze and have the future of ERP in the SMB market be revealed precisely, virtually all of the ERP vendors, no matter the size, have some ERP system offerings that are geared to SMB firms. SMB firms will benefit by having the ability to behave like a bigger integrated company without the expense of the big 3 ERP makers. For the SMB firms, the future looks bright as the technology and business maturity has reached a greater critical mass for adoption. They will have an access to affordable ERP solutions that offer enterprise- level performance. They will have the ability to compete with larger firms.

However, selecting the right system can be a challenging task. Any company, large or mid sized,

should do a thorough analysis of its business needs prior to research ERP vendors. Each ERP system is different and can provide varying levels of customization. SMB firm should research potential ERP system in regards of 'Fit to business', 'Inter-connectivity' and the 'Reporting and analysis capability' thoroughly to identify the exact match with their business processes. Once there is a clear understanding of the services needed, it will be easier to determine which ERP product is best suited for the business. Choosing the appropriate ERP system will be a factor in the success of ERP implementation, as well as ongoing operational effectiveness of the company. All in all, ERP translates into a smart way for SMBs to construct a path to future growth and strategic advantages.

## REFERENCES

[1] America & China. Retrieved February 2009 from America & China Small & Medium Sized Business Conference, Web site http://www. acweb.org/acsmsbc/

[2] Barnard, Stuart. "Making the most of your enterprise software in 2009", http://www. manmonthly.com.au/Article/Making-the-most-of-your-enterprise-software-in-2009, 2009.

[3] Bartholomew, D. ERP Vendors: Big Get Bigger, Industry Week, 254(2), 2005, pp.51 -52.

[4] Compiere(2009). Retrieved February 2009 from Web site http://www.compiere.com/products/platform/index.php

[5] Coreen, B., Gartner Dataquest(2006). Retrieved February 2009 from Wikipedia Web site http://en.wikipedia.org/wiki/List_of_ERP_vendors.

[6] Darrow, B.. Business Software Suites -- Champ's Edge: Microsoft -- Price for Performance, Presales Support, Technical Education. CRN, 1238: 2007, p.25.

[7] Industry Week(IW), 256(5), 2007, P.46.

[8] Infor(2009). Retrieved February 2009 from Web site http://www.infor.com/product_ summary/erp/erpbaan/

[9] JDA (2009). Retrieved February 2009 from Web site http://www.jda.com/solutions/

[10] Kanaracus, Chris, "Could the recession be good for enterprise software?", http://www. infoworld.com/d/developer-world/could-recession-be-good-enterprise-software-774, 2009.

[11] Kugel, R. D., The Big Midsize Challenge, Business Finance, 13(11), 2007, pp.39-40.

[12] Lawson(2009). Retrieved February 2009 from Web site http://www.lawsonsoftware.com/wcw.nsf/pub/Applications_index

[13] McGreevy, Maura, "Midsize Enterprises Will Increase ERP Budgets by 5.1% in 2008". Retrieved February 2009 from AMR Research Reports(2007), Web site http://www.amrresearch.com/Content/View.asp?pmillid=20997

[14] Microsoft(2009a). Retrieved February 2009 from Web site http://www.microsoft.com/dynamics/gp/product/productoverview.mspx..

[15] Microsoft(2009b). Retrieved February 2009 from Web site http://www.microsoft.com/

[16] Microsoft(2009c). Retrieved February 2009 from Web site http://www.microsoft.com/dynamics/nav/product/overview.mspx.

[17] Olson, D.L, Managerial Issues of Enterprise Resource Planning Systems. New York: McGraw-Hill. 2004.

[18] Open for Business(2009). Retrieved February 2009 from Web site http://ofbiz.apache.org/

[19] Openmfg(2009). Retrieved February 2009 from Web site http://www.openmfg.com.

[20] Oracle(2009a). Retrieved February 2009 from Web site http://www.Oracle.com/applications/e-business-suite.html

[21] Oracle(2009b). Retrieved February 2009 from Web site http://www.Oracle.com/solutions/mid/

Oracle-ebusiness-suite.html.

[22] Ray Wang, "Competition Intensifies For The SMB ERP Customer", Business Process & Applications Professionals, 2007.

[23] Roberts, B. (2007). HRMS for the Rest of Us. HR Magazine, 52(7), 91-94.

[24] Sageaccpac(2009a). Retrieved February 2009 from Web site http://www.sageaccpac.com/products/accounting/default.aspx.

[25] Sageaccpac(2009b). Retrieved February 2009 from Web site http://www.sageaccpac.com/products/accounting/default.aspx

[26] Sagesoftware(2009a). Retrieved February 2009 from Web site http://www.sagesoftware.com/products/index.cfm/tab/1/customer/2

[27] Sagesoftware(2009b). Retrieved February 2009 from Web site http://www.sagemas.com/products/sagemas90_mas200/

[28] SAP(2009a). Retrieved February 2009 from Web site http://download.sap.com/solutions/businesssuite/erp/customersuccess/download. epd

[29] SAP(2009b). Retrieved February 2009 from Web site http://www.sap.com/usa/solutions/businesssuite/erp/index.epx

[30] SAP(2009c). Retrieved February 2009 from Web site http://www.sap.com/smallbusiness/solutions/overview/index.epx

[31] SAP(2009d). Retrieved February 2009 from Web site http://www.sap.com/usa/solutions/sme/businessallinone/businessbenefits/index.epx

[32] SAP(2009e). Retrieved February 2009 from Web site http://www.sap.com/usa/solutions/sme/pdf/P6_OK_06_22284_CustomerFAQ_Business_ByDesign.pdf

[33] SAP(2009f). Retrieved February 2009 from Web site http://www.sap.com/usa/solutions/sme/businessbydesign/overview/index.epx

[34] US Government. Retrieved February 2009 from Web site http://www.census.gov/epcd/www/smallbus.html, 2009.

[35] Wailgum, Thomas. "SMB ERP Projects: Don't Forget the ROI", http://www.computerworld.com/s/article/9130906/SMB_ERP_Projects_Don_t_Forget_the_ROI?source=NLT_MGT, 2009.

[36] Weier, M. H.. Workday Not Along in ERP as Service. InformationWeek, 265(9), 2007, p.26.

[37] Wikipedia(2009). Retrieved February 2009 from Web site http://en.wikipedia.org/wiki /Small_and_medium _enterprise

[38] Workday(2009). Retrieved February 2009 from Web site http://www.workday.com/ who_we_are
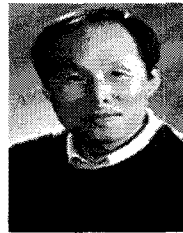
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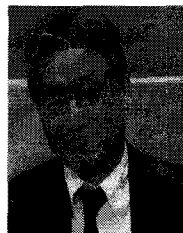


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