

# **E-Mail as solution for marketing the Federated ERP Components on basis of Web Services**

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The exchanging of the ERP system's components which are distributed on the basis of web service is in fact a new business idea. This idea comes to supply the needs of the small and middle size Enterprise (SME) from the business software and especially the ERP system through the ERP system distributed on the basis of the web service. This new idea should be materialized in an appropriate business model. This act shows a step to achieve an appropriate business model for marketing the independent standard ERP component on a base of web service. This aim of this step is to find the best sort of business model. The adjustment and the nature of this new commodity could lead us to an appropriate.

**Field of research:** E-Business

## **1. Introduction**

The increasing number of the small and medium companies' employees, extended the need for flexible functionalities in ERP systems. SMEs face different problems when they buy the ERP systems, like (Abels, Brehm, Hahn & GÓmez, 2006; Brehm & GÓmez, 2007).

- Not all downloaded components are required.
- The usage, conditioning, and maintenance of these products are too expensive.

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An *ERP system* is a standard software system which provides functionality to integrate and automate the business practices associated with the operations or production aspects of a company. The integration is based on a common data model for all system components and extends to more than one enterprise sectors. Figure 1 shows the architecture of today's ERP systems [Abts & Mülder, 2002; Robey, Ross & Boudreau, 2002; Rautenstrauch & Schulze, 2003; Gronau, 2004).

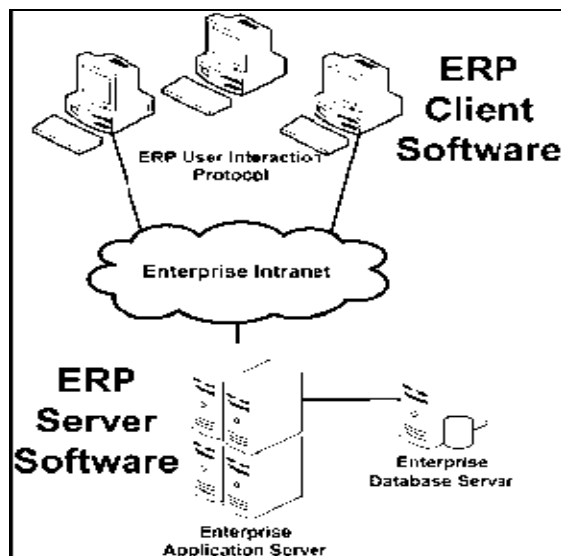


Figure 1. Conventional ERP system architecture

Normally, an ERP-Vendor offers a single ERP-System, which is the basis for the integration of various types of business applications. The functionality of this ERP-System covered all of the functions of the enterprise sectors that are implemented and controlled by the respective vendor. The installing, developing and maintenance of this system is very expensive. Only big companies are able to cover this cost while the small and medium businesses are not able to do so; therefore, in the last few years the idea of the Federated ERP-System in the basis of Web-Services has evolved (Asfoura, Kassem, Rautenstrauch, Gómez & Jamous, 2008 )

A *federated ERP system* (FERP system) is an ERP system which consists of system components that are distributed within a computer network. The overall functionality is provided by an ensemble of allied network nodes that all together appear as a single ERP system to the user. Different ERP system components can be developed by different vendors. Figure 2 shows a federated ERP system architecture where ERP components are provided as services by external component providers. Through the FERP system, companies pay only for components deemed necessary. Also, the needed End-Hardware is made available by the service provider which in turn, reduces costs (Abels, Brehm, Hahn & Gómez, 2006; Brehm & Gómez, 2007; Brehm & Gomez, 2007).

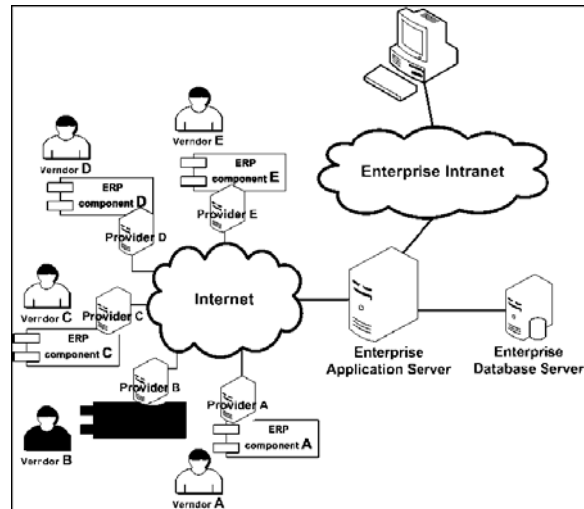


Figure 2: Federated ERP System on Basis of Web-Services

An ERP system component in this case is a reusable, closed and marketable software module which provides services over a well-defined interface. These components can be combined with other components in an unpredictable manner (Turowski, 2003). The search for these services is covered by the functionality which is considered as the logical and stable construction stone in ERP system (Brehm & Gómez, 2007).

Exchanging ERP's components as web services need a suitable business model. Therefore, businesses should be adopted to fulfil the new idea's need.

A Business model involves (Timmers, 1998):

- The architecture for the product, service and information flows.
- The business actors, their roles, their potential benefits from the business model, and the revenue streams.

And in order to reach this goal, we present a group of characteristics and their attributes, which can be used as a base for selecting and diagnose the most suitable business model. These characteristics are:

- Types of business model in E-commerce.
- Phases of transaction.
- Revenue's model

## 2. Type of business model in E-commerce

IT is sorted on the basis of who is doing the commercial operation if it was the proposing model, the customer, or the agent, also the differentiation between the known and unknown act of the practitioner of the model on this bases. The business model is divided into three groups (Bartelt & Lamersdorf, 2001):

## **2.1 Supplier model:**

This group divided into:

1- Supplier model with unknown acts: In this model the demonstrator acts with the customer in unknown ways. So he proposes his commodities then he waits the order from the customer, for example: online shopping.

2- Supplier model with known acts: In this business model the demonstrator acts in known ways towards the customer and wait for the customer to advertise his commodities, for example: E-newsletters.

## **2. 2 Consumer model**

This group divided into:

1- Consumer model with unknown acts: In this business model the customer demonstrates his needs and wait for a proper offer from the demonstrator, for example: E-tending.

2- Consumer model with known acts: In this type the customer inquires and connects directly the proper demonstrator, for example: shopping agent, and e-procurement.

## **2.3 The intermediary model:**

In this model, the agent is the element which stands between the seller and the customer and he can act towards both, in known or unknown ways. The importance of this element comes from reducing and facilitating the commercial and practical cost and the tow most famous examples are the E-mall and E-auction.

## **3. Phases of transaction:**

### **3. 1 Information phase**

In this phase, demonstrator shows his commodities through the (Internet platform) as an advertisement so the customers could find the suitable commodities.

### **3. 2 Bargaining/ Negotiation phase**

In this phase, the transacting sides connect and discuss the commercial terms, like the prices and the buying conditions until they reach an agreement of either completing or cancelling the deal.

## 4. 3 Transporting and paying phase

This phase includes the paying and transporting through proper systems in a way that fits the properties of this good.

## 5. Revenue's model

Revenue model is divided into:

- *Sources of revenue.*
- Forms of revenue.

### 4. 1 Sources of revenue

The sources of Revenue fall into three categories (Skiera & Lambercht, 2000):

- The revenue from "*Products*": generated by selling tangible and intangible goods.
- The revenue from "*Contacts*": generated from ads or sponsoring to reach customers.
- The revenue could also generate through collecting information about consumers and selling this information to a third party.

### 4. 2 Forms of revenue

On one hand, Wirtz classified the form of revenue according to the players (i.e. buyers and sellers) into direct and indirect revenue. On the other hand, he classified the form of revenue according pricing conditions into transaction-dependent and transaction-independent (Nüttgens, 2008; Wirtz, 2001):

- Direct revenue: corresponds to direct revenue from a customer.
- Indirect revenue: corresponds to revenue from a third party.

Transaction-dependent revenue: stems from interaction between a customer and an institution.

Transaction-independent revenue: refers to the revenue which stems from individual marketable transactions

The intersections of these four categories yield four characteristics of revenue:

1- Direct transaction-dependent revenue: Consists of revenue from transactions, connection fees and service fees. Revenue from transactions results from customer payments for using or accessing the products or the services of the company/institution.

2- Indirect transaction-dependent revenue: Generated from an intermediary institution as a third party (provision).

3- Direct transaction-independent revenue: Refers to the base fees and premiums on a continuous basis for using a product or service.

4- Indirect transaction-independent revenue:

Banner ads: revenue from banner ads refers to using a designated advertisement space on a website under the control of a third party.

Data mining: revenue from data mining generated by selling collected information about customers to a third party.

Sponsorship: revenue from sponsorships refers to renting an advertisement space exclusively by a third party.

## 5. Finding the appropriate business model for exchanging the standard of the FERP components

In the case of web service base ERPs, the needs of small and medium companies are supported by the ERP functionality through many components. These components in the form of web Service are being treated by different sellers and not always by the same seller.

The connection between a customer and several ERP's providers is difficult and take a lot of time; therefore the intermediary commercial model is a suitable model. This intermediary presents the ERP components of different providers and organizes a cross vendor to satisfy the functionality demanded by the customers (Abels, Brehm, Hahn & Gómez, 2006; Asfoura, Kassem, Rautenstrauch, Gómez & Jamous, 2008; Brehm & Gomez, 2007).

The main role of the intermediary is publishing and searching for the web services. This scenario for the intermediary is shown in the Figure 3.

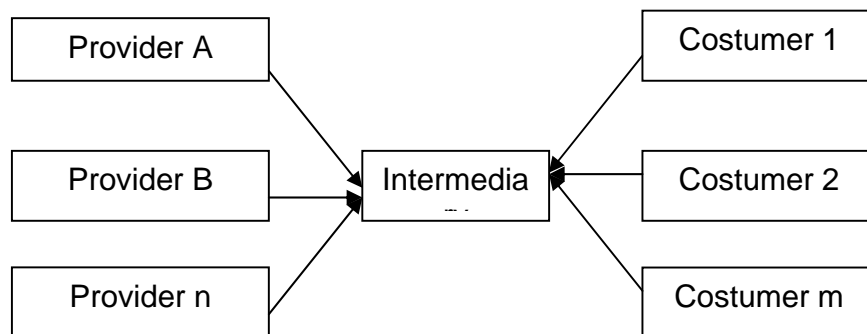


Figure 3: the intermediary - Scenario

The acting elements in this business model are:

- The ERP web service providers.
- The intermediary.
- The customer.

In order to be able to define the suitable intercession form, we will present two possible forms, compare their properties and choose one of them.

### 5.1 The first possibility, E-Auction-Platform

In this case the intermediary publishes the information about the ERP web service and its provider; it also supervises the deal between the provider and the customer “the price”.

The delivering and payment phase is done directly between the provider and the customer. Figure 4 shows this business model scenario.

The revenue of this business model is generated indirectly through the mediation between the ERP web services' provider, and the consumer (SME) as a rate of return from every transaction and also through advertisement at the platform.

Direct revenue is possible when the intermediary offer a supporter services like exercising and consulting services

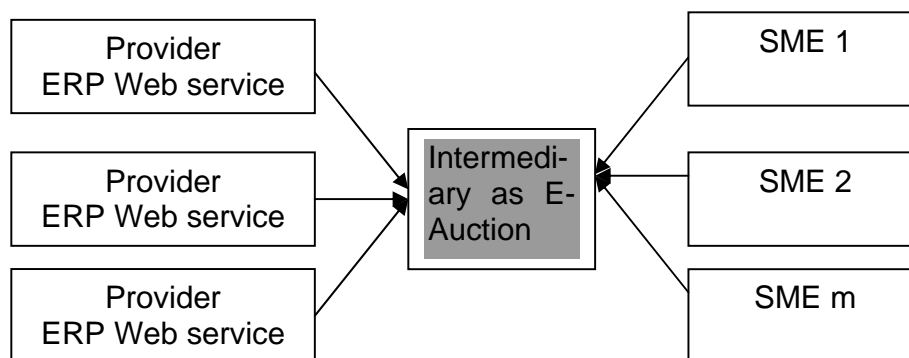


Figure 4: business model for exchange ERPs' components as E-Auction

Some of the advantages of this form are:

- Consumer (SME) could find easily the providers of ERP web services who provide its needs from the ERP functionality.
- The providers could easily reach many customers.
- The intermediary has the chance to achieve additional revenue through offering supporter services.
- Good chance for small and medium providers to compete in the market

Some of the drawbacks of this form are:

- The consumer (SME) must sign many contracts when its needs of the ERP web services are covered by different providers.
- Every provider is partially responsible. In other word, there is no “one” responsible party which SMEs should deal with in case of failure or any accident.
- As a result of these problems, beside the high prices of ERPs software, we consider this possibility practically inapplicable.

## 5.2 The second possibility, E-mall-platform

The E-mall platform is the result of grouping more than on ERP shop related to more than one provider on one platform. E-mall uses one system for most of the transactions. Those transactions could be like presenting and offering the product, delivery system, paying system, etc.... In this case all the ERPs' shops

look like one shop. The E-mall owner “mediator” is the only responsible party, and the SMEs deal directly with this mediator, and complete all the transactions or the phases with the mediator. Figure 5 shows this business model scenario.

Revenue in this business model is direct transaction-dependent revenue, where it is generally generated through the licenses of ERPs’ functionalities which presented as Web Services. In addition, marketing supporting services considered as another possible source of revenue.

Indirect transaction-independent revenue could be possible through adding advertisements on the platform, where the huge number of visitors is a good factor to encourage the interested parties.

Determining the revenue is possible through the final determination of the payment action for these digital services, and the determination of the cash flow among the actors.

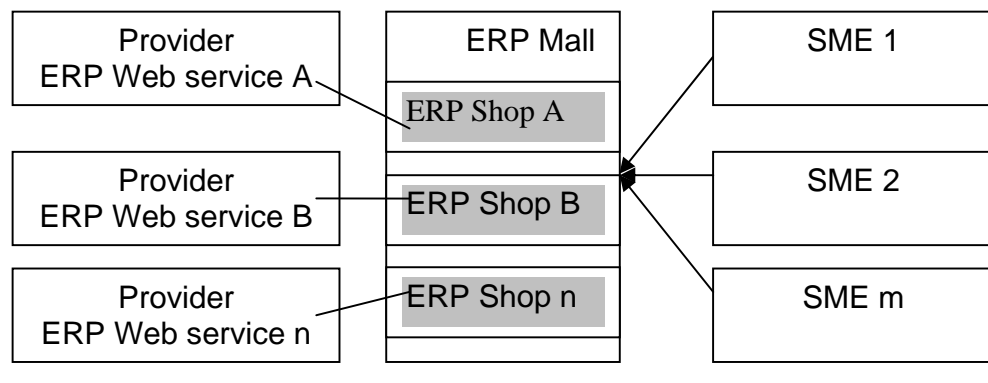


Figure 5: business model for exchanging ERPs’ components as E-Mall

Besides the advantages of the first possibility, the E-mall combines all aspects of transactions in one platform which reduces the risk for customers that buy the distributed functions. This, of course, is a big advantage to the first possibility. The ERP mall, therefore, is the best type of the business model which, if adopted properly, leads to a suitable business model for marketing the standard ERP components.

## 6. Conclusion

This participation shows a new and important idea for exchanging the standard ERP components as services. This idea presented to solve the SME's problems with ERP systems. As a result, it has been determined that the ERP mall is the closest type of business model which leads to achieve the best business model for this new idea. And it has been characterized through a group of characteristics. This business model must be adopted to be in line with the new product's nature. One of the most important recommendations is that the

intermediaries do the entire role and carry on the full responsibility on behalf the consumers.

## References

- Abels, S., Brehm, N., Hahn, A. & Gómez, J. M. 2006,'Change management issues in federated ERP-systems – An approach for identifying requirements and possible solutions',. International Journal of Information Systems and Change Management (IJISCM), 1, pp 318-335.
- Abts, D & Mülder, W. 2002,'Grundkurs Wirtschaftsinformatik. Eine kompakte und praxisorientierte Einführung', 4. Aufl., Braunschweig et al., 2002.
- Asfoura, E., Kassem, G., Rautenstrauch, C., Gómez & Jamous, N. 2008,' The classification of business model for the exchange of distributed components of Federated ERP Systems', In: Proceedings of the 3rd IEEE International Conference on information and communication technologies (ICTTA'08), Damascus, Syria, April 7 - 11, 2008.
- Bartelt, A.& Lamersdorf, W 2001,'Geschäftsmodelle des Electronic Commerce',in: Informatik 2001 - Wirtschaft und Wissenschaft in der Network Economy, pp 902-908).
- Brehm, N & Gomez, J. M. 2007,' Federated ERP-Systems on the basis of Web Services and P2P networks', International Journal of Information Technology and Management (IJITM).
- Brehm & Gómez, J. M. 2007,'Web Service-basierte Referenzarchitektur für Föderierte ERP-Systeme', In: (Pietsch, T.; Lang, C.V. Hrsg.): Ressourcenmanagement. Erich Schmidt Verlag, Berlin, 2007; S. 125-142.1875.
- Brehm, N., & Gómez, J. M. 2007,'The Web Service-based combination of data and logic integration on Federated ERP systems', 18th IRMA International Conference - Managing Modern Organizations with Information Technology, (IRMA2007). Vancouver, Canada.
- Brehm, N., Gómez, J. M & Rautenstrauch C. 2006,'An ERP solution based on web services and peer-to-peer networks for small and medium enterprises', In: International Journal of Information Systems and Change Management (IJISCM), Vol. 1, No.1, pp 99-111.
- Gronau, N. 2004,' Enterprise Resource Planning und Supply Chain Management', Architektur und Funktionen. München.
- Merz, M 2001,' E-Commerce und E-Business. Marktmodelle, Anwendungen und Technologien', Kap. 3 dpunkt Verlag, Heidelberg.

- Nüttgens, M 2008, ' Geschäftsmodelle für dienstbasierte informationssysteme- ein strategisservicesvon Webcher Ansatz zur Vermarktung ', in journal of Wirtschaftsinformatik, p 34.
- Rautenstrauch, C.& Schulze, T. 2003,' Informatik für Wirtschaftswissenschaftler und Wirtschaftsinformatiker', Berlin et al.
- Robey, D., Ross, J. & Boudreau, M. 2002,' Learning to implement enterprise systems: An exploratory study of the dialectics of change', Journal of Management Information Systems, 19, 1, pp 17- 46.
- Timmers . P . 1998,' Business Models for Electronic Markets', in: Electronic Markets 8(2).
- Turowski, K. 2003,' Fachkomponenten: Komponentenbasierte betriebliche Anwendungssysteme', Aachen
- Skiera, B.& Lambercht, A. 2000 ,' Erlösmodelle im Internet', in Herrmann, A., Albers, S. (Hrsg.), pp 817.
- Wirtz , B. W 2001 ,'elechtronic Business',2.Auflage Wiesbaden.