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A Process Model for Assessing the Distribution Options for Horizontal E-Business Portals

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ABSTRACT

E-business portal acts as an interface between the e-suppliers and e-customers and many different types of distribution channels are defined individually by various enterprises. The logistics management and decision parameters for distribution models depend on the type of portal e.g. horizontal or vertical. In this paper the focus is on the distribution channels defined for horizontal portals, which are critical aspects of e-business but are not as explored as the other aspects. In this paper, various aspects of e-business models have been analyzed and research reveals that distribution issues need to be looked at with a fresh approach, because the tradition methods do not take into account some typical characteristics of e-business like the range of goods, transactional values and volumes the horizontal portals nowadays handle. Towards this end, three types of distribution channels for a generic horizontal portal have been identified. A decision parameter table has been formulated and used to assess various options for the distribution logistics for the horizontal portals. Also each of these broad categories has been dealt with individually highlighting their salient features along with the advantages and disadvantages associated. The primary objectives for assessment are cost savings and profit maximization of the portal. An assessment process model has been developed on the basis of some key e-business tangible parameters like transactional value, business volume etc. which can be further extended to include specific e-business model dimensions. The parameters are also analyzed subsequently in terms of their availability, size etc. so that the implementation considerations can be realistically made. Finally, the application potential, extendibility and usability of the process model have been explained and it has been shown that this generic model is simple, flexible and specific implementations can lead to e-business portals functioning with a better competitive advantage.

Keywords: Horizontal portals, e-business, distribution models, decision parameters, process model

1. INTRODUCTION

E-business: nowadays complete concept in its own, covers all aspects of a traditional business, including CRM. E-business models, like any traditional business model can be primarily conceived as a revenue-generation model, supported by the other necessary business activities like finance, marketing models etc. ([1], [8]) and it also reflects the company's position in the value chain. The models range from the simplest where a company produces a good or service and sells it to customers, to models more intricately woven, e.g. e-auctioning, brokerage, dynamic pricing or community service-based models where the value chain is not directly or obviously understood or are multi-level hybrids of other simple models.

Whatever the business models [9] are, there is a lot of research evidence about the basic fact that the web has incorporated radical paradigm shifts in the traditional business models [14] and also has given rise to new ones. The web has actually complemented or reinvented tried-and-true models, and has opened hitherto unseen revenue-earning models. [13]

1.1 Various Aspects Of E-Business Models

E-business models have been defined, analyzed and categorized in many different ways and they continue to evolve. When analyzed in the context of references [1], [3] and [14], they essentially include the following aspects:

1. supply chain management
2. customer satisfaction and CRM
3. marketing
4. cost vs. quality of service

Most of the research work on the paradigm shift in e-business models is concerned about the supply chain management, customer satisfaction and CRM, and marketing ([5], [12]). The cost to quality of service aspect is one area which includes procurement and distribution logistics. Interestingly, even though traditional business models give a lot of emphasis onto these elementary aspects, research reveals that many successful e-business companies or portals are still sticking to the traditional models so far as procurement and distribution are concerned. Procurement has some research leverages as research efforts on B2B portals are coming up with interesting concepts like collaborative commerce and ERP II etc. But distribution options are still the traditional ones, which are not letting an e-business company to fully exploit its' unique e-enabled infrastructure. Profitability in E-supply chains (ref. [4], [10]) includes considerations on

confidence of customer on supplier, more availability than possible in the physical world and data integrity. The first two elements are primarily dependent on the value-chain including procurement and distribution issues. This paper handles these issues relating to the distribution models of e-business portals focusing on speed of delivery and customer satisfaction which reflects the quality of service aspect, customer relationship and cost associated with distribution channels. The distribution problem for horizontal portals has been handled here and a solution process model is suggested.

2. PORTALS: HORIZONTAL OR VERTICAL

Horizontal portals have broad, general user base e.g. Indiatimes.com, yahoo.com etc. which are often B2C type in nature. Conversely, vertical portals serve a particular industry or a user community's supply chain, e.g. indiamart.com- the cyber-marketplace for automobile industry. For vertical portals, supply chains are mainly B2B type, quite well-defined by traditional business and can be followed in e-business as well using EDI and on bulk business. But, horizontal portals operate primarily as e-shopping malls wherein a diverse range of products of various companies are available [15]. These portals acting mostly as virtual intermediaries do not prefer intermediate physical warehouses thereby eliminating the necessity of an effective inventory management and control system. But this way, the horizontal portals have to cater to a huge range of demands of individual customers with orders of varied sizes and transactional values, raising a unique distribution problem in itself [6]. While minimizing on the cost of distribution, the customers also have to be satisfied with the speed of order fulfillment and delivery of goods [7].

The traditional mathematical foundation of distribution logistics has been operations research techniques like transportation and assignment models. But the typical characteristics of horizontal portals e.g. the huge range of transactional values, huge variations in the volume of products etc. are neither taken into account nor analyzed in these traditional methods. An attempt is made in this paper to address this particular issue. These aspects have been included in the analysis and are reflected in the set of decision parameters chosen which is elaborated in section 5. Selection amongst various available options to decide on distribution logistics is inherently dependent on the type of business models the portal uses. Following section gives a brief overview of them.

3. HORIZONTAL PORTAL MODELS

Some of the successful business models of the horizontal portals ([1], [8], [11]) are discussed below.

3.1 Direct Producer-Consumer Model

Herein, E-business removes intermediaries from the supply chain, creating a direct, efficient link between producers and consumers. A manufacturer sells directly to customers, increasing profitability while reducing consumer costs by eliminating warehouse and reseller markups. Even the primary contact for service and support also moves through online channels resulting in reduced overhead and speedy service response. Example includes lgezybuy.com [16] - a popular horizontal portal with a big range of white goods manufactured exclusively by LG. Biggest drawback is that the choices of consumers are restricted to just one manufacturer.

3.2 Intermediary Model

Herein, E-business introduces an intermediary for creating an E-Market- the biggest area of e-business with a great number of e-shopping malls and horizontal portals operating. Advantages include availability of options, best and competitive prices, elimination of mid-warehouses and reduction in extra costs like freight etc.

3.3 Customizable Models

They create investing and merchandising opportunities that were previously not available to ordinary customers. Example: baazee.com

Apart from these common models, E-business operates with various other business options too, e.g. brand-building on an e-shopping mall and integrating market segments and product segments. These businesses may or may not deliver the best possible price, but both suppliers and customers find the convenience of a single point of contact worth the exchange.

For optimal functioning of order fulfillment cycle, it is very crucial for these portals to define suitable distribution models for the products/ services they sell. If the portals' business is entirely IT-enabled and service-oriented like the airline/ railways reservation systems or accommodation booking systems etc., the supply chain is not a major issue. For example an on-line train ticket booking portal, which delivers the e-booked tickets overnight, can use any eminent courier company and take the delivery charges i.e. courier charges from the customer, which he/ she is ready to pay for the convenience of the service. But as regards the portals which sell a diverse range of goods from different manufacturers and importers, distribution becomes a crucial bottleneck in the order fulfillment cycle. In order to tackle this, there are a number of options available for the distribution models applicable which are explained in the next section.

4. HORIZONTAL PORTALS: DISTRIBUTION

For portals like yahoo.com selling a huge range of goods from different manufacturers and importers, there are several distribution models available to complete the order fulfillment cycles with a defined efficiency and in a cost-effective way. These models, as perceived by the authors, are mentioned and analyzed below

Model 1) Customer -> Portal -> Manufacturer/importer -> manufacture/ importers' warehouse -> freight carriers(single company goods -> customer

Advantages:

- It eliminates mid-warehouses completely.
- Best quality product is available since company inspected goods are sent straight to customers without getting stored by dealers.

Disadvantages:

- It may not prove to be cost-effective
- Decision parameters have to reflect
- Relative locations of company warehouses and customer.
 - Scale of business.
 - Transactional value.
 - Product price/profitability i.e. .if the profit involved can justify the freight charges or not.

Model 2) Customer -> Portal -> Manufacturer/importer -> manufacture/ importers' warehouse-> exclusive dealers' warehouse -> freight carriers(single company goods) -> customer

Advantages:

- Relative location advantages can be taken.
- Bulk handling will result in lesser freight.

Disadvantages:

- Dealers' commission can not be eliminated. So the company can not get maximum profit and so is unable to pass on cost savings to customers.
- Quality control can not be ensured.

Model 3) Customer -> Portal -> Manufacturer/importer of ordered product ->dealers handling multiple company goods-> freight carriers(multiple company goods) -> customer

Advantages:

- Shared distribution channels / transportation infrastructure/ shared costs is possible between companies.

Disadvantages:

- It can not eliminate dealers' margin.

5. ASSESSMENT OF MODEL OPTIONS

Key business parameters associated with decision making for choosing a model out of the three alternative model options are identified herein as:
T1: Relative location of individual customers and company/ warehouses X transport cost per unit distance

T2: Freight charges: based on weight or volume

T3: Transactional value

T4: Cumulative historical transactional values with the customer (can be procured from historical databases/ marketing data marts)

The business parameters reflect the aspects which have been discussed in the introduction, i.e. the first two parameters *T1* and *T2* include the cost aspect, *T3* and *T4* deals with customer value which in turn reflects indirectly customer satisfaction and relationship parameters. Many other relevant parameters may be included which can be business/ context-specific and the table can be further extended.

5.1 The Process Model

The assessment and decision making process is hereby developed and discussed as a process model which can later on be mapped onto an algorithm or a flow chart with more specific application orientation. In this paper the process model is developed and presented so that a generic understanding of the process can be achieved.

Process model-

Assumptions:

1. Weightings to parameters are to be given in the range of 0-1, i.e. $W1 + W2 + W3 + W4 = 1$
2. All parameters are to be quantified in the same unit e.g. \$

Steps:

1. Calculate the Tangible Option values as follows:
 $Value1 = (W1 * T1 \text{ value} + W2 * T2 \text{ value})$
 $Value2 = (W3 * T3 \text{ value} + W4 * T4 \text{ value})$
2. Then
 Select the best model option with (minimum of *value1* and maximum of *value2*)
3. If the Minimum ($W1 * T1 \text{ value} + W2 * T2 \text{ value}$) and maximum ($W3 * T3 \text{ value} + W4 * T4 \text{ value}$) do not coincide with the same option, then calculate the relative weight of *T1*, *T2*, *T3* and *T4*, i.e. $(W1 + W2) / (W3 + W4)$
4. if $((W1 + W2) / (W3 + W4)) > 1$, then choose the option with Minimum($W1 * T1 \text{ value} + W2 * T2 \text{ value}$), else choose the option with maximum ($W3 * T3 \text{ value} + W4 * T4 \text{ value}$).

6. ANALYSIS OF THE PARAMETERS

The parameters given in the assessment process are analyzed here individually in terms of the following analysis dimensions:

1. Availability of data
2. Computational complexity
3. Volume (data element size)

Table: Parameter analysis matrix

Parameters Vs Analysis dimensions	T1:	T2:	T3	T4:
Availability of data	high	high	high	High
Computational complexity	Low	Low	Low	high
Volume (data element size)	Low	Low	Low	low

From the above analysis, one important resource-related observation is made that is a data warehouse/data mart(for T4) is needed for recording transactional histories of individual customers and calculating the cumulative transactions, which reflects the level of customer loyalty and indirectly customer satisfaction also. These parameters can also be very useful for customer relationship management.

7. HIGHLIGHTS OF THE PROCESS MODEL

The process model analysis shows the following points:

1. A fresh approach, unbiased on the side of traditional operations research techniques is reflected in the process model which takes care of typical e-business aspects discussed in section 1.
2. This process model is flexible, can be combined with traditional logic and a hybrid solution can be developed
3. This model does not want to replace the well-researched areas of transportation and assignment problems but want to complement them by adding typical aspects of e-business.
4. This process model does not necessarily give the most optimal or cost-effective solution, but it gives a realistic and easily usable way to evaluate various options.
5. The process is simple and easy to comprehend.
6. The process can easily be converted to a computable program without any hidden conflicts. The computational requirements are also minimal and therefore the program executing this process will be highly computationally feasible i.e. processing requirements will be less.
7. It can be used by e-business organizations of any size and capabilities.

Some aspects of this process can be extended further, i.e.

1. Inclusion of other parameters exclusively applicable to any particular e-business scenario/architecture/ company-specific requirements
2. This process only takes into account the tangible values. Intangible ones have not been included because it is a very complex process to convert them into monetary values which is not of the prevalent assumptions made in this process

8. CONCLUSION

The process model proposed in this paper has a realistic application potential, primarily because it is simple, understandable by any business person without any formal mathematical training i.e. knowledge of operations research techniques etc. It is also simple, therefore easy to implement and execute. Even though, it does not guarantee a perfectly optimal solution, it does address the distribution issues typical to various horizontal portals, issues that have so far been rather overlooked. In fact, vertical or B2B portals also can use this model to redefine their distribution channels, which can be more structured and standardized than horizontal ones. The extension possibilities are great as the model is simple, flexible, scalable and can be modified easily to suit specific business/ context requirements.

Coming out of the traditional mindset in dealing with this type of issues, and embracing new ideas and innovations generated in any of the basic infrastructural aspects would be capable of making e-business environment all the more competitive. Such efforts will also allow the new business models exploit their newness in all possible ways by considering all its' aspects with fresh approaches.

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