

Methodological Approach for Choosing Portfolio of E-Business Models

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ABSTRACT

As seen in the wide range of researches, the lack of a proper and profitable business model is an important factor in companies' failure and in the use of Internet and e-business. In this paper we want to determine the best (or portfolio of) e-business models for each organization by which they can use Internet and information technologies in the optimal manner in their business. To do so, we will consider strategies, organizational and environmental conditions of each organization and determine the best e-business models in the base of these conditions. So two steps appraisal process be introduced, that can improve the earlier frameworks and remove their disadvantages and also it can assist managers in the choice phase of decision-making.

Keywords: electronic business models, decision making process, organizational characteristics

1. INTRODUCTION

The Internet is challenging the economic, social, and technological foundations of the old economy. In essence a revolution is taking place, entrepreneurs developing new models for business, the economy, and government. A business model is a method of doing business by which a company can generate revenue to sustain itself. The model spells out how the company adds value, which customers are willing to pay for, in terms of the goods and/or services the company produces in the course of its operations (Turban, 2002, p.8). Many companies are starting to use the Internet to communicate with both, their customers and suppliers, creating new digital electronic commerce networks that bypass traditional distribution channels. The Internet, the web, and intranets can help companies achieve new levels of competitiveness and efficiency, but one of the management challenges that they raise is finding a successful Internet business model (Laubom, K. et al, 2001, pp.251-252).

Nowadays from all sides – from investors, stock market analysts, employees, customers, suppliers and competitors – have pressured to senior managers of 'Old Economy' companies to migrate from marketplace to marketpace (Weil et al, 2001), in other side developing e-business models for conducting e-business is not simply about the adoption of new technologies. It also concerns changes in work practices, in customer/supplier relationships, in the way products are delivered to consumers, in marketing practices and changes in staff skills needed to support e-business. Accordingly, e-business models signify new opportunities for re-organizing the way businesses are currently practiced (Vassilopoulos and et al., 2001). It can be said that the companies' first action in moving toward e-business is the choice of the best e-business model because in e-business models all the changes that are mentioned are regarded and explained. But nobody has introduced a

complete methodology for choosing e-business models up to now. Also the evaluation of all the e-business models is very difficult .so this paper attempt to introduce a methodology for choosing the proper e-business models for organizations by introducing the factors that effect on the portfolio of e-business models.

In proposed methodology shortcomings of prior works is removed and all phases of Simon's decision-making process (intelligence, design, choice) is covered so systematic decision making for choosing e-business models is presented. In order to introduce the mentioned methodology, the result of Hayes and Tjan works are addressed.

The paper is organized as follows. The second section presents the e-business model concept and an overview of current understanding of e-business models in the literature. Section three expresses the Simon's decision-making process. Section four explains e-business models classifications as they are reported in the current literature and Then Tjan's model is introduced. In Section 5, Methodological approach for evaluating e-business models in real world is proposed and finally suggestion and conclusions is expressed.

2. E-BUSINESS MODEL CONCEPT

The benefits of living in a fast changing information society would become evident if effective e-business practices are implemented, offering companies exposure and access to global markets and consumer access to customized, high quality services. Innovative and effective e-business models facilitate such practices (Vassilopoulos and et al., 2001).

The term *Business Model* rose to prominence In the 1990s with the advent of IT-centered businesses. The rise of the term is closely related to the emergence and diffusion of commercial activities on the Internet.

Internet start-ups used the term to differentiate themselves from the incumbents and to explain their competitive position. The term appeared first in 1970s in computer science journals, after 1995 also in popular business and computer magazines like *Business Week* or *Wired* before it gained access into peer-reviewed journals focusing on the emerging field of e-commerce and e-business. Today the term is frequently used also in other management journals like *Harvard Business Review* (Stahler, 2001). Accelerating growth of IT and ICT has raised the interest for changing traditional business models or developing new business models that better exploit the opportunities offered by technological innovations. That is why within the last few years, the discussions about business models and the impact of the Internet on them have become more topical (Pateli et al., 2002). However, there is still no common understanding of how a business model is defined, how to develop business models, which are the principal business models, how to transform business models, etc (Alt and Zimmerman, 2001). In other words, there is no consolidated knowledge considering various aspects of business models.

A research made by the Institute of Strategic Change of Accenture (Linder & Cantrell, 2000) concluded that:

“Developing a sound business model matters for making money. However, business models wear out, and firms must alter them in order to remain viable. The better managers know their business model, the more better they can manage patterns of change”. That reveals that understanding business models is a prerequisite for organizations that wish to change their business to remain competitive. A number of cases in which the understanding and use of business model is essential:

1. Understanding the key elements and mechanisms in a specific business domain and their relationships (Osterwalder & Pigneur, 2002).

2. Communicating and sharing the understanding of a business model among business or technology stakeholders (Gordijn & Akkermans, 2001c).

3. Experimenting with innovative business concepts to determine if current business models can be easily adapted to new concepts (Eriksson & Penker, 2000), as well as to assess the viability of new business initiatives (Weill & Vitale, 2001).

4. Specifying valid requirements for the Information Systems that support the business model (Eriksson & Penker, 2000)

5. Identifying options for changing and improving the current business model (Eriksson & Penker, 2000), thus facilitating change (Osterwalder & Pigneur, 2002).

Table 1. Business Model Definitions

Researchers	Definition
Magretta (2002)	A story that explains how an enterprise works.
Petrovic et al. (2001) Auer & Follack (2002)	A description of the logic of a “business system” for creating value that lies behind the actual processes.
Jutla, Bodorik, Wang, (1999)	The business model determines processes and transactions. (i.e. business process- retail [external, internal], procurement, transaction- buy, payment registration etc.)
Applegate (2001)	A description of a complex business that enables study of its structure, the relationships among structural elements, and how it will respond to the real world.
Timmers (1998)	Architecture for the product, service and information flows, including a description of the various business actors and their roles; a description of the potential benefits for the various business actors; and descriptions of sources of revenues.
Osterwalder & Pigneur (2002)	A description of the value a company offers to one or several segments of customers and the architecture of the firm and its network of partners for creating, marketing and delivering this value and relationship capital, in order to generate profitable and sustainable revenues streams.
Weill & Vitale (2001)	A description of the roles and relationships among a firm’s consumers, customers, allies and suppliers that identifies the major flows of product, information, and money, and the major benefits to participants
Tapscott et al. (2000)	A business model is about the invention of new value propositions that transform the rules of competition, and mobilize people and resources to unprecedented levels of performance.

Several attempts have been made so far to define e-business models. Table 1 presents the widely cited definition provided by Timmers (1998) as well as some other definitions suggested more recently in the literature. These definitions range from generic (Magretta, 2002; Petrovic et al., 2001) to more concrete ones (Timmers, 1998; Weill & Vitale, 2001; Osterwalder & Pigneur, 2002). Thus, we can find definitions that explain what the purpose of a business model is, while other definitions focus on specifying its primary elements, and possibly their interrelationships.

Furthermore some researchers perceive the Business Model as a purely business concept that explains the logic of making business for a firm (Timmers, 1998; Linder & Cantrell, 2000; Petrovic, 2001; Rappa, 2001), while some others consider it as a link between strategy, business processes, and information systems (Nilsson et al., 1999; Osterwalder & Pigneur, 2002). The difference between these two interpretations of Business Models concerns the relationship of Business Model with the concepts of Strategy, Business Processes, and Technology. While in the first

interpretation the three concepts are included in the description of Business Model, the second interpretation considers them as inter-linked components set in different levels of a pyramid construct. In this paper, a business model is considered as the conceptual and architectural implementation (blueprint) of a business strategy and represents the foundation for the implementation of business processes and information systems.

3. DECISION MAKING PROCESS

Decision-making is regarded as one of the most important activities carried out by an organization (Simon, 1960). Simon has distinguished two extremes regarding the structuredness of decision problems. At one end of the spectrum are well-structured problems that are repetitive and routine and for which standard models have been developed. Simon calls these programmed problems, example of such problem is weekly scheduling of employees. At the other end of the spectrum are unstructured problems, also called nonprogrammed problems, which are novel and non-recurrent such as evaluating an electronic commerce initiative. Semistructured problems fall between the two extremes (Turban et al, 2001,p.43). The decision to engage in electronic business can be seen as non-programmed as new strategies and new technologies are required (Hayes et al., 2003).

Systematic decision-making process according to Simon, involves three major phases: intelligence, design, and choice. Simon's model is the most concise, and yet completes characterization of rational decision-making. In the intelligence phase the reality is examined and the problem is identified and defined. Importance of this phase is that impossible solutions are eliminated which saves in time and money. In the design phase, potential alternative solutions are identified and criteria are set for evaluation of the alternative courses of action. The choice phase includes selection of a proposed solution to the model (not to the problem it represents). (Turban et al., 2001,p41)

Choice is the critical act of decision-making. The choice phase is the one in which actual decision is made and where the commitment to follow a certain course of action is made. The boundary between the design and choice phases is often unclear because certain activities can be performed during both the design and choice phases and because one can return frequently from choice activities to design activities. The choice phase includes search, evaluation, and recommendation of an appropriate solution to the model.

Little research has been conducted on determining appropriate ebusiness models and strategies despite its importance to organizational decision-makers. Finnegan and Golden (1995) propose that the adoption

of electronic business applications is based on two factors; market receptivity and the probability of competitor adoption. Coltman et al. (2001) highlight the importance of the organizational environment to decisions regarding electronic business. Hayes and Finnegan (2003) have attempted to help decision makers with the intelligence phase in relation to assessing the potential of e-business models. Their research identified a set of organizational factors, or organizational prerequisites, that are critical for the successful assessing ebusiness models. Decision makers can use this list of organizational prerequisites to help focus decision-making activity at the intelligence phase.

This paper aims to utilize the prerequisites concept to develop a methodological approach to help managers focus on all phases of decision-making (intelligence, design, choice) by excluding electronic business models that are not compatible with prevailing organizational, environmental/supply chain conditions in first level of evaluation and choosing of appropriate ebusiness model by considering other factors that introduced by Tjan (2001) in second level of evaluation. In fact this proposed approach is extended of Hayes's model.

4. E-BUSINESS MODELS CLASSIFICATION

A great deal of research has been directed towards classifying business models and grouping them into specific categories. The business models belonging to the same category usually share some common characteristics, such as the same pricing policy or the same customer relationship model Pateli, Giaglis, 2003. The taxonomy frameworks of Business Models that are presented in the literature differentiate based on two factors: a) *Criteria* posed for classifying Business Models, b) *Objects classified*, whether they are entire business initiatives (such as Amazon, eBay, etc), possibly combining multiple business models (Timmers, 1998; Rappa, 2001), or atomic business models that can be incorporated into an ebusiness initiative (Weill & Vitale, 2001). The most common sets of criteria are:

- *Interaction Pattern and Value Chain Integration* (Timmers, 1998),
- *Functional Integration and Degree of Innovation* (Timmers, 1999),
- *Core Activities and Price – Value Balance* (Linder & Cantrell, 2000),
- *Economic control (both hierarchical and self-organizing) and value integration* (Tapscott et al., 2000),
- *Sourcing: What businesses buy (manufacturing versus operating inputs) against how they buy (systematic versus spot sourcing)* (Kaplan & Sawhney, 2000).

- *Degree of value integration (low to high) and control (self-organizing to hierarchical) in the supply chain (Ticoll et al., 1998)*

The existence of multiple sets of criteria suggests that there are no established and commonly agreed to criteria for classifying business models, but some criteria, such as Value Integration, may be used in various taxonomy frameworks. Moreover, most taxonomy frameworks seem to be narrowly defined for Internet e-Business models. A notable exception is found in Tapscott et al. (2000), who introduce a rather generic taxonomy of Business Models that could apply not only to Internet but also to any type of electronic business featured by a network structure.

In order to construct the proposed model, we have examined classification theories of particular electronic business models based on the work of different researchers specially Hayes et al. (2003) and Tjan (2001). It is clear from such research that particular models are more likely to operate under certain conditions.

Hayes et al. (2003) by combining the work of Ticoll et al. (1998), Timmers (1999), and Kaplan and Sawhney (2000) proposed that electronic business models could be classified according to how they exhibit varying degrees of economic control, value chain integration, functional integration, business innovation and technical innovation. They developed the prerequisites framework for assisting decision makers assess the suitability of electronic business models during the intelligence phase of the decision making process and not in other phases. The basis of their prerequisites model is shown in Table 2. This framework hypothesizes that a particular business model is more likely to succeed in a particular industrial sector when the characteristics of the sector match the conditions required for the model. The framework has the potential to help decision makers by providing a

method of excluding from consideration those electronic business models that are unsuitable for given prevailing organizational and environmental characteristics.

In this paper we extend this framework to consider all phases of Simon's decision-making process (intelligence, design, choice) by utilizing Tjan's model as second level evaluation because in this model financial and human aspects and other factors that influence the viability of particular electronic business models have been identified.

Tjan (2001) adopted a business project portfolio applications approach to create an Internet portfolio-planning matrix. However, instead of trading off industry growth and market position, here the strategy is based on *company fit*, which can be either low or high, and the *project's viability*, which can also be low or high. Together these create an *Internet portfolio map (matrix)*. A business model's viability can be assessed on a scale of 1 to 100, by four criteria: market-value potential, time to positive cash flow, personnel requirements, and funding requirements. Then, an average score (simple average) for each metric is computed. For *fit*, the following criteria are used: alignment with core capabilities, alignment with other company initiatives, fit with organizational structure, fit with company's culture and values, and ease of technical implementation. Then each of business models is assessed on a qualitative scale of high, medium, low. The various e-business models are then mapped on the *Internet portfolio matrix*, based on the average scores for viability and fit. The Internet matrix is divided into four cells, as shown in Figure1. If both *viability* and *fit* are low, the project is killed. If both are high, then the project is adopted. If *fit* is high, but *viability* is low, the project is sent to redesign. Finally, if the *fit* is low but the *viability* is high, the project may be sold or spun off.

Table 2. Characteristics of E-Business Models (Hayes et al., 2003)

Business model	Economic Control	Functional Integration	Supply chain Integration	Innovation	Sourcing
E-shop	Low	Low	Low	Low	Systematic
E-mall	Low	Medium	Low	Medium	Systematic
E-procurement	Medium	Medium	Medium	Medium	Systematic
E-auction	Low	Medium	Medium	Medium	Spot/systematic
Information brokerage	Low	Low	Low	High	Not applicable
Trust services	Low	Low	Low	Medium	Not applicable
Third party marketplace	High	High	High	High	Spot/systematic
E-hubs	High	High	High	High	Spot/systematic
Virtual communities	Medium	Medium	High	High	Not applicable
Value-chain integrators	High	High	High	High	Not applicable
Value-chain service providers	Low	Medium	Medium	High	Not applicable
Collaboration platforms	Low	High	High	High	Not applicable

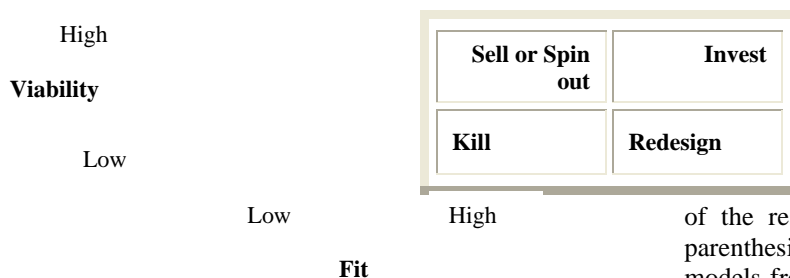


Figure 1. Internet Portfolio Map (Tjan, 2001)

5. USING THE PROPOSED METHODOLOGICAL APPROACH

This methodological approach is used to change the current business model toward proper e-business model and it will be useful for the companies that are doing there business traditionally and at the same time want to experience e-business and use of internet in their operations. To do so, in this section a framework is proposed that helps organizational decision makers to select the proper e-business model by a two step appraisal process. In the primary step of this appraisal process, at first those models, which have less chance to be selected, would be identified and ignored for the next step. Doing so results in reduction in cost and time because there will be little number options to be appraised in detail. You can find more detail about this step in the next section. This approach has been improved in comparison with previous models and has removed their disadvantages. Also it has covered all of the Simon's decision-making phases (intelligence, design and choice) and has introduced a systematic procedure to make decision about business model choice. Another specification of this framework is introduction of new criteria that can be useful in e-business model selection.

5.1 Primary appraisal: deletion of unsuitable business models

This step of appraisal covers intelligence and design phases of decision-making process. The aim of this step is to exclude those electronic business models that are not suitable given prevailing organizational and environmental characteristics. So in the next step there will be the little number of business models that should be appraised more thoroughly and therefore it results saving in time and cost of choosing proper e-business model. Using Hayes model is proposed method for identification of unsuitable business models, because by using this model it is possible to determine organizational and environmental condition by measuring economic control, value of supply chain integration, value of functional integration, degree of innovation and sourcing. In table 3 we can see the rating scales were completed by senior managers within the food company known to the authors. The calculated scores and associated rating for the company

are shown in Table 3. Low, medium and high rating are determined as being 0–34%, 35–69%, and 70–100% (respectively) of the available marks. The ratings in Table 3 were then compared with the characteristics of e-business models previously shown in Table 2. An extract of the results is shown in Table 4. The ratings in parenthesis are those required for individual e-business models from Table 2. The five models in the table are unsuitable due to the differences between the company scores and the model characteristics. So in this step we ignore them and appraise the remained 7 business models.

5.2 Secondary appraisal: selection of suitable business models

In this step the remained models from the previous step that are potentially suitable for the company are appraised more accurately, regarding Tjan model's criteria. For this purpose, at first quantitative criteria of *viability* for each of the e-business models is assessed in the 0 to 100 scale (table 5) and then qualitative criteria of *fit* assessed in the base of intellectual scales (low, medium, high) (table 6). Then, by regarding the average of obtained scores, the position of regarded business models is determined on the Internet Portfolio Matrix (fig 2). As we can see, regarding implemented appraisal, the company should employ portfolio of e-shop, e-procurement and information brokerage models.

6. CONCLUSION

Today there are too many pressures on companies to use Internet and Information Technology in their business activities and go forward to e-business. But almost they don't know how to use this new knowledge and technologies. In this paper a methodological approach introduced that can be decision-makers' guideline in selection of suitable business model. In this framework the previous models disadvantages have been removed and also it has covered all of the Simon's decision-making phases (intelligence, design and choice) and has introduced a systematic procedure to make decision about business model choice. Also by performing a two-step appraisal process, it ignores the business models that have less probability to be selected, in the first step and cause to reduction in cost and time for choosing suitable business model. The Proposed approach is conceptual, and has not been empirically tested at this point. Our findings from the pre-test of this model are positive. However, further testing is required.

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Table 3. Summary data for the company

	Economic Control	Supply Chain Integration	Functional Integration	Innovation	Sourcing
Score	87/150	76/153	93/151	93/125	–
Percentage	58%	50%	61%	74%	–
Rating	Medium	Medium	Medium	High	Spot/Systematic

Table 4. Comparing the framework with company ratings

Business model	Economic Control	Supply chain Integration	Functional Integration	Innovation	Sourcing
Virtual Communities	Medium (Medium)	Medium (High)	Medium (Medium)	High (High)	Systematic (Not applicable)
E-hubs	Medium (High)	Medium (High)	Medium (High)	High (High)	Systematic (Spot/systematic)
Third Party Marketplace	Medium (High)	Medium (High)	Medium (High)	High (High)	Systematic (Spot/systematic)
Collaboration Platform	Medium (Low)	Medium (High)	Medium (High)	High (High)	Systematic (Not applicable)
VC Integrators	Medium (High)	Medium (High)	Medium (High)	High (High)	Systematic (Not applicable)

Table 5. Assessing viability of e-business models

Business model	Alignment with core capabilities	Alignment with other company initiatives	Fit with organizational structure	Funding requirement	Ease of technical implementation	Average
1.E-shop	H	M	H	H	H	H
2.E-mall	M	M	H	L	M	M
3.E-procurement	H	H	H	H	H	H
4.E-auction	M	M	L	H	M	M
5.Information brokerage	M	H	H	H	H	H
6.Trust services	L	M	L	L	L	L
7.VC service providers	L	L	L	L	M	L

Table 6.Assessing fit

Business model	Market value potential	Time to positive cash flow	Personnel requirement	Funding requirement	Average
1.E-shop	80	90	85	95	85
2.E-mall	65	45	70	60	60
3.E-procurement	80	95	80	65	80
4.E-auction	55	60	40	65	55
5.Information brokerage	45	85	95	95	80
6.Trust services	5	10	15	5	10
7.VC service providers	15	25	25	15	20

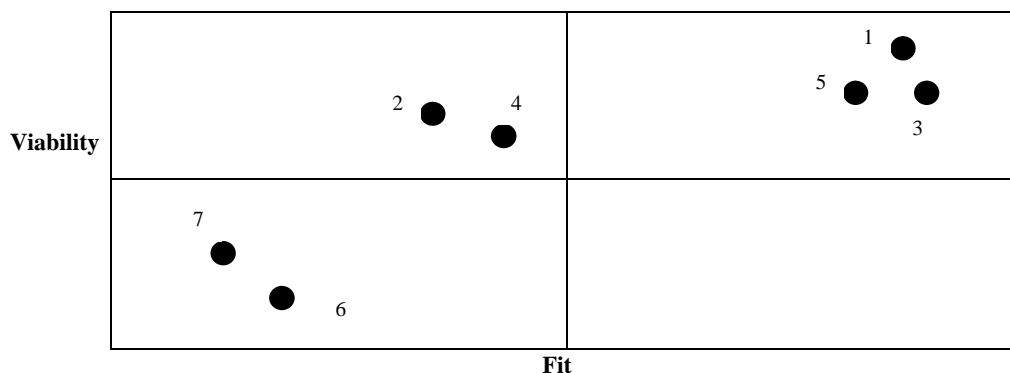


Figure 2. Portfolio of e-business models

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