



Electronic Business Model Selection Using The Analytic Hierarchy Process

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Abstract

The rapid global development of electronic business (e-business) and information technologies has required managers to make decisions to balance technical factors with strategic business goals. Enterprises need to have a strategy before they start an e-business. They have to understand the fundamentals of a business and plan how a future business should look like. Therefore, an e-business model should be planned before starting an e-business. There have been many studies on e-business models throughout the world. However, by the time the e-business has not penetrated appropriately in Iranian companies. This research tries to providing useful information on e-business models for Iranian companies. Since not all of the existing e-business model can be applied to any company, the research has proposed a method based on analytical hierarchy process (AHP) to provide insight into selecting an appropriate business model. The method uses a panel of experts to select between a wide variety of available business models. In addition, the benefits and challenges of e-business development in Iran are categorized. The nature of this paper is to provide useful information on e-business models for Iranian companies. Therefore, future research is planned to empirically validate the proposed process.

Key words: business, analytical hierarchy process, Electronic business models

1.Introduction

The rapid improvement of technology has affected almost every aspect of human life. Emerging information and communication technologies (ICT) have changed the way we live, learn, communicate, conduct business, etc. The rapid growth and the mass proliferation of internet have allowed businesses to expand into electronic world, opening out their markets and enhancing their operations.

In today's competitive and saturated market, companies need to have a strategy before they start an electronic business. They have to understand the fundamentals of a business and plan how a future business should look like. Therefore, an e-business model should be planned before starting an e-business. E-business models not only act as a key communication channel for customers' access, but they also provide a method for finding potential customers and maintaining stable relationship with current customers (Hanafizadeh and Nikabadi, 2010). E-Business models can help managers simulate e-businesses and learn about them, which is a way of doing risk free experiments, without endangering an organization (Sternman, 2000).

Today a large number of successful e-business models with different characteristics are available. However, according to the small business administration, about 50% of small businesses fail each year, and 95% of small businesses fail within the first 5 years. Therefore, selecting an appropriate e-business model for a company is a sensitive and important issue and needs considerations. This paper tries to introduce a model, which helps companies to select an appropriate and successful business model. The introduced model uses the analytic hierarchical process (AHP), which is a popular technique for organizing and analyzing complex decisions. Using the proposed model, companies are able to select an appropriate business model, which allies with the company's strategies and processes. In continuation, the article addresses a literature review. The first three parts of the literature review are related to the literature of e-business, e-business models and their classifications. The proposed model is described in section 3. Section 4 describes the state of e-business and its challenges in Iran and in section 5 we conclude.

1 Literature review

1.1 E-business models

The advent of Internet calls for new understanding of business. Electronic business is the application of ICT in support of all the activities of business. The term "e-business" is used to broadly describe the publishing of information and the performing of various transactions over the internet, extranets, or intranets (Fleener and Raven, 2002).

An e-business model is a representation of how a company buys and sells goods and services and earns money (Osterwalder, 2004). According to Dubosson-Torby et al. (2002), a business model is the architecture of a firm and its network of partners for creating, marketing and delivering value and relationship capital to one or several segments of customers in order to generate profitable and sustainable revenue streams. E-business modeling has similar goals to enterprise modeling. Modeling helps firms develop business visions and strategies, redesign and align business operations, share knowledge about the business and its vision and ensure the acceptance of business decisions through committing stakeholders to the decisions made (Presson and Stirna, 2001).

Many previous researches have attempted to classify business models in order to understand how e-companies are making or not making money (Dubosson-Torby et al., 2002). They classify business models with a certain number of common characteristics in a set of different categories (Osterwalder, 2004). Some of the most popular classifications schemes are shown in Table 1.

1.2 Analytic hierarchy process (AHP)

The AHP method, which was first introduced in 1970s by Thomas L. Saaty, is a technique for organizing and analyzing complex decisions. AHP has particular application in group decision making. The procedure for using the AHP can be summarized as:

1. Define the problem and determine the kind of knowledge sought.
2. Structure the decision hierarchy from the top with the goal of the decision, then the objectives from a broad perspective, through the intermediate levels to the lowest level.
3. Construct a set of pair wise comparison matrices. Each element in an upper level is used to compare the elements in the level immediately below with respect to it.
4. Use the priorities obtained from the comparisons to weigh the priorities in the level immediately below. Do this for every element. Then for each element in the level below add its weighed values and obtain its overall or global priority. Continue this process of weighing and adding until the final priorities of the alternatives in the bottom most level are obtained.

AHP has been widely used in different decision-making situations in government, business, industry, management and education. Different modifications of the AHP technique exist. This presentation is based on the original AHP version developed by Thomas L. Saaty (1970).

Author	Year of Study	Categories of e-business models
Timmers	1999	E-shop E-procurement E-auction E-mall Trust services Info brokerage Third-party marketplace Virtual communities Value-chain service provider Value-chain integrators Collaboration platforms
Tapscott et al.	2000	Agora Aggregation Value Chain Alliance Distributive Network
Linder and Cantrell	2000	Price Models Convenience Models Commodity-Plus Models Experience Models Channel Models Intermediary Models Trust Models Innovation Models

Rappa	2003	Brokerage Advertising Infomediary Merchant Manufacturer (Direct) Affiliate Community Subscription Utility
Weill & Vitale	2001	Content Provider Direct to Customer Full-Service Provider Intermediary Shared Infrastructure Value net Integrator Virtual Community Whole-of- Enterprise/Government
Turban et al	2005	online direct marketing electronic tendering systems name your own price find the best price affiliate marketing viral marketing group purchasing online auctions product and service customization electronic marketplaces and exchanges information bartering deep discounting membership value-chain integrators value-chain service providers supply chain improvers

Table 1: E-business models classification

2 Choosing an appropriate e-business model

Today a large number of successful e-business models with different characteristics are available. However, according to the small business administration, about 50% of small businesses fail each year, and 95% of small businesses fail within the first 5 years. Therefore, before starting an e-business, a company should conduct researches and consider the impact of a range of internal and external factors to adopt a particular business model. In this section, the authors have introduced a process model based on AHP, which can help decision-makers choose an appropriate business model. The process model is shown in Figure 1.

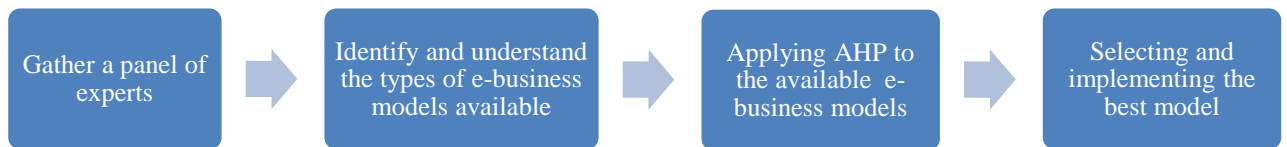


Figure 1: the process model for selecting an appropriate e-business model

The first step to choose an appropriate e-business model is to gather a panel of experts. This panel should be selected carefully from the company's managers and experts. The panel

experts are responsible for participating in the AHP process and selecting the best model. The second step comprises of analyzing the business processes and identifying the compatible types of e-business models. For example, if the company is a bookstore, some of the available business models are e-shops and e-malls.

In the third step, the AHP algorithm is applied to the potential e-business models determined in the previous step. The following four steps of AHP should be done to find the best e-business model.

1. The problem is determined as “Finding the Optimal E-business model”.
2. The hierarchy structure is determined using the criteria and alternatives.
3. Pair wise comparisons are constructed to estimate the relative importance weights of the various elements on each level of the hierarchy.
4. The final priorities of the alternatives in the bottom most level is obtained.

According to Kotler and Scott (1991), in order to succeed, a business idea must be innovative, attractive, competitive, pursuable and capable to generate revenue. The final AHP model is structured according to these criteria and is shown in Figure 2. After applying AHP to the model and selecting the best model, the e-business model should be implemented in the enterprise.

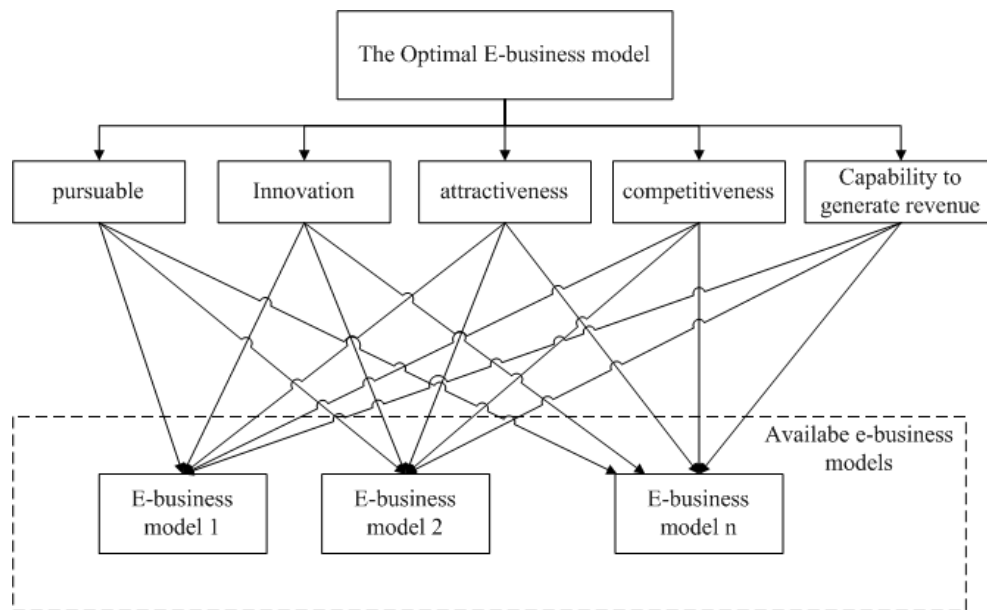


Figure 2: The AHP hierarchy for selecting an appropriate e-business model

3 E-business models in Iran

Iran is located in the Middle East in the north of Persian Gulf and the south of Caspian Sea with a population of about 75 million. Up to the late 1970s, Iran was a key hub of ICT in the Middle East and many foreign suppliers had their own branches in Iran (Abbasi, 2007). According to *Internet World Stats* the number of internet users has grown from 250,000 in 2000 to near 42 million in 2012. In 2012, Iran has the largest amount of Internet users (53.3 percent) in the Middle East. However, according to the Economist website (2012), E-commerce in Iran is far from becoming a viable avenue for businesses. Very limited online

transactions are possible in the country, though certain service providers allow their customers to purchase services online using prepaid personal credit.

Despite all of the problems existing for e-business growth, there are a few companies, which have decided to use Internet and other networks to do their business. The *Meydoonak.com* website, which was first built in 2010, is the first online supermarket in Iran. This website is offering more than 2,500 grocery and household items at competitive prices. The online supermarket operates from 8am to 12 pm every day except Fridays.

The e-shop (Timmers, 2001) or direct to customer (Weill and Vitale, 2001) business model, which tries to interact electronically with customers and sell different kinds of products and services directly to them, has been widely implemented in Iran. *Digikala.com*, *shop.ir*, *chare.ir* and *aftabbazar.com* are some of these shops, which sell digital goods such as computers, digital cameras, network tools, TV sets, etc. *Fardabook.com* is a popular online bookstore, which sells and ships a variety of Persian books worldwide. *Orado.com* is a popular website with the purpose of selling various appliances such as electric and electronic devices, kitchen appliances, computer games etc.

Group-buying is a well-known and popular electronic business model. Group-buying businesses offer products and services at significantly reduced prices on the condition that a minimum number of buyers would make the purchase. There are many websites working in this area such as *takhfifan.com*, *netbarg.com*, *offchi.ir*, *iroopon.com*, etc. Their offers are mostly in the area of tourism, restaurants, beauty salons and selling digital products.

The advertising business model is a well-known electronic business in Iran. Hundreds of Iranian websites conduct an advertising business. According to Rappa (2003), the web-advertising model is an e-business model, in which a web site provides content (usually, but not necessarily, free) and services (like email and free file downloading services) mixed with advertising messages in the form of banner ads. The banner ads may be the major or sole source of revenue for the broadcaster. Some of the most visited websites with this kind of electronic business are *downloadha.com*, *mihandownload.com* and *takmovie2.inandmusicbaran.org*.

Furthermore, weblogs are another popular e-business model in Iran. According to the most recent figures from Harvard's Berkman Centre for Internet and Society, the number of Iranian active blogs has raised from 60000 in 2008 to 105000 at the end of 2011. Enterprises and individuals engage in different kinds of business on their weblogs from giving information about music, books and even recipes to selling their products and services. According to Alexa Ranking website, *blogfa.com* is the third most popular website in Iran, 259265 websites have linked to this website and has the 139th place in Traffic Rank in the world.

As mentioned above, many successful e-business models exist in Iran. However, e-business is still in its incipient stages. There are many companies, which do not even have an appropriate website. This may be due to the lack of information about e-business models and their revenue generation methods. The following sections describe some of the benefits and challenges of conducting an electronic business in Iran.

3.1 Benefits

The benefits of implementing e-Business tools are not only in the use of technology, but also in the simplifying of business processes and the ease in finding new markets. Some of the most important advantages and benefits of e-business developments for enterprises include:

1. E-business helps small and medium enterprises (SMEs) to understand what customers really value and deliver good results virtually (Sanayei and Rajabion, 2009).
2. Electronic business methods enable companies to link their internal and external data processing systems more efficiently to work more closely with suppliers and partners, and to better satisfy the needs and expectations of their customers.
3. Adopting an e-business model reduces the cost of doing business by lowering company's costs. Less paper work, lower communication costs, less transaction costs are some of the effects of using an electronic business.
4. E-business development improves the speed of response to customers. For example, implementing an online ordering system and integrating sales order system with order fulfillment and delivery, allows companies to speed up on the progress of their orders at all times.
5. Developing e-businesses in a country enables enterprises to reach new markets worldwide. There are methods of promoting products online that allow enterprises targeting the customers from the other side of the globe.
6. E-business development enables customers to get what they want more easily. Customers can search in a huge amount of information, find and compare suppliers, make an order and pay for what they want in a shorter time without wasting their time wandering in marketplaces.
7. E-business provides higher hours of operation. A website provides 24-hour and seven days service to customers. Customer can place an order anytime during a day.

3.2 Challenges

As mentioned in the previous section, developing an e-business model creates many opportunities for an enterprise. However, when it comes to starting an online business, they are still many challenges. Some of the most prominent challenges are organized as follows.

1. Privacy and security of transactions is one major concern for anyone who wants to conduct an online business model (Karakaya and Charlton, 2001). People in Iran do not have trust in online businesses. Iranian citizens are always worried about losing their money by buying commodities online. Furthermore, they are always concerned about identity theft between online shoppers in Iran. They think if they enter their account number in a payment gateway, the payment gateway will save the information and use it in illegal acts. Therefore, they are reluctant to engage in any electronic business activity.
2. Another major barrier to e-business development is that there are not enough rules and regulations to protect online buyers and sellers. Although there has been some progress in this field and a few number of rules have been set to protect people's privacy, but there is still a huge gap in this area.
3. International studies based on experiences of leading countries show that providing infrastructure is a key issue to e-commerce development (Abbasi, 2007). Similar to e-commerce, lack of good infrastructure is a major barrier to e-business development. Creating an appropriate information technology infrastructure is still in its incipient stages in Iran. Currently, there are many urban and rural areas in Iran, which do

not have access to internet connection or mobile networks and in the areas, which have access to these technologies, the quality of them are not appropriate enough for e-businesses to grow. Even in Tehran, the capital of Iran, most citizens do not have access to high-speed internet or other networks. The lack of telephone lines, low quality, slow speed and high cost of bandwidth should be addressed before users and enterprises can think of participating in any kind of e-business (Lawrence and Tar, 2010; Fleenor and Raven, 2002).

4. There are many people in Iran, which do not know how to use information technology tools. Every day you can see many older women or men in the streets, asking someone to help them using an ATM machine, or helping them paying their bills online. There are employees, which do not know how to work with computers. Unless appropriate education is not provided, these people will not be able to engage in any kind of e-business.

4 Conclusions

It is apparent that the Internet and e-business have changed the way firms do business globally. In today's world of competition and technology, implementing an e-business strategy in organizations is inevitable. As industries are reshaped towards e-business, deciding on an e-business model and strategy to act upon is a vital starting point for firms. One contribution of this paper is that it proposes a process model to select from a range of possible e-business model. The model is based on AHP process, which is a simple and effective method for selecting from the available alternatives. The purpose of this research is to introduce a method for selecting an e-business for companies. Future research can be done to empirically test the results of the model. The proposed model can be used in any industry to select and implement an appropriate e-business model.

Reviewing the e-business status in Iran is another contribution of this paper. In addition, some benefits and challenges for implementing e-business in enterprises are introduced. Determining the critical success factors of e-business implementation in Iran is another issue, which can be dealt with in future research. To sum up, companies can use the information of this research to learn about current e-business models and trend in Iran and decide an appropriate e-business model for their companies considering the competitiveness and innovation of their Idea.

References

1. Abbasi, A., 2007. E-Commerce Development in Iran. *Webology*, 4(4).
2. Alexa, 2012. Alexa Ranking. Available at: <http://www.alexa.com/siteinfo/blogfa.com>.
3. Dubosson-Torbay, M., Osterwalder, A. & Pigneur, Y., 2002. E-Business Model Design, Classification and Measurements. *Thunderbird International Business Review*, 44(1), pp.5–23.
4. Fleenor, C.P. & Raven, P., 2002. Barriers To Effective E-Business In Developing Countries. *International Business & Economics Research Journal*, 1(4), pp.39–48.
5. Hanafizadeh, P. & Nikabadi, M.S., 2010. Framework for selecting an appropriate e-business model in managerial holding companies Case study: Iran Khodro. *Journal of Enterprise Information Management*, 24(3), pp.237 – 267.
6. Karakaya, F. & Charlton, E.T., 2001. Electronic commerce: current and future practices. *Managerial Finance*, 27(7), pp.42 – 53.
7. Kotler, P. and Scott, W.G., 1991. *Marketing Management Analysis, Planning Implementation and Control* 7th ed., Prentice-Hall International, Englewood Cliffs, NJ.
8. Lawrence, J.E. & Tar, U.A., 2010. Barriers to ecommerce in developing countries. *Information, Society and Justice*, 3(1), pp.23–35.

9. Linder, J. & Cantrell, S., 2000. Changing Business Models: Surveying the Landscape, accenture Institute for Strategic Change.
10. Osterwalder, A., 2004. *The business model ontology a proposition in a design science approach*. Universite De Lausanne.
11. Persson, A. & Stirna, J., 2001. Why Enterprise Modelling? In *Conference on Advanced Information Systems Engineering*.
12. Rappa, M., 2003. Business Models on the Web. , <http://digitalenterprise.org/models/models.html>.
13. Sanayei, A. & Rajabion, L., 2009. Critical Successful Factors Contributing to E-Commerce Adoption among Iranian SMEs. *International Journal of Information Science and Management*, 7(2), pp.57–65.
14. Sternman, J.D., 2000. *Business Dynamics: Systems Thinking and Modeling for a Complex World*, Boston: McGraw-Hill.
15. Tapscott, D., Lowy, A. & Ticoll, D., 2000. *Digital Capital Harnessing the Power of Business Webs*, Harvard Business Review Press.
16. Timmers, P., 2001. *Electronic Commerce: Strategies and Models for Business to business Trading*, John Wiley & Sons, Ltd. (UK).
17. Turban, E. et al., 2005. *Electronic Commerce: A Managerial Perspective* 4th ed., Prentice Hall.
18. Weill, P. & Vitale, M.R., 2001. *Place to space: Migrating to eBusiness Models*, Harvard Business School Press.