Framework for selecting an appropriate e-business model in managerial holding companies
Case study: Iran Khodro
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Abstract
Purpose – The main aim of the present study is to propose a framework for selecting an appropriate electronic business (e-business) model in managerial holding companies with a chain structure acting in the area of the automobile industry.

Design/methodology/approach – This is an applied study conducted as a survey and case study. First, the factors affecting selection of an appropriate e-business model in managerial holding companies with chain structure in the auto industry are identified through a survey and by testing hypotheses. Then, these factors are measured as a case study in Iran Khodro Co. so that the appropriate e-business model can be determined for this managerial holding company with chain structure.

Findings – In this study, 18 different factors were identified for the five main criteria in identifying e-business. Using the survey conducted in the statistical sample, only three factors of internal and external integration of human resources, flexibility, and decentralization in the responsibilities were identified as less important factors in identifying an appropriate model of e-business in managerial holding companies with chain structure in automobile industry.

Research limitations/implications – One limitation of the study was lack of sufficient managerial holding companies with a chain structure in the Iranian automobile industry, so that only two companies of Iran Khodro and Saipa possess holding and chain structure. Thus, generalization of the results of this study to the whole society must be done with great care in association with more researches.

Originality/value – This study, expanding and operationalizing a conceptual model, tries to identify the set of determining factors in selecting appropriate e-business models in the managerial holding companies with a chain structure in the automobile industry.

Keywords Holding companies, Electronic commerce, Automotive industry

1. Introduction
The internet is considered as an important innovation in international business environment and acts as a very important tool. It plays a very important role in conducting international business in the twenty-first century. Business models derived from the internet not only act as a key communication channel for customers’ access, but also provide an active method for finding potential customers and maintaining stable relations with current customers. So, the companies and consumers cannot ignore these models. On the other hand, the e-business models can be regarded as strengthening tools for globalization process (Cateora and Graham, 2002). Studying e-business in Iran is so necessary that a plan has been introduced titled as The E-business Development
Comprehensive Plan, and all organizations involved are bound to carry out this plan (E–Business Development Comprehensive Plan of Iran, 2009).

The holding companies are one of the most important structures for meeting the objectives associated with moving towards market-oriented economies (Kumar, 1992) and due to their particular characteristics, including synergy in functional, managerial and portfolio aspects (Ansoff and McDonnell, 1990), they can be distinguished from other trade companies.

The present article aims at the identification of important factors in determining a proper e-business model in managerial holding companies with a chain structure in the auto industry. There are extensive articles on small and medium enterprises (SMEs) adoption e-business. But we could not find articles about identifying various factors for e-business adoption and e-business model selection in holding companies. Therefore, the development of a framework for identification and analysis of the important factors in determining a proper e-business model in managerial holding companies with a chain structure is one of the innovative aspects of the research. Domain research is Iranian managerial holding companies with a chain structure in the automobile industry.

In continuation, the article addresses a literature review. The first and second parts of the literature review are related to the literature of holding companies and the literature of e-business models and then, research synthesis, respectively. The third part is allocated to working out a conceptual model for research. The fourth part explains the research methodology. In the fifth part the development of a framework for choosing an e-business model in managerial holding companies with a chain structure in the auto industry is considered. Finally, the findings are discussed and analyzed in the last section.

2. Literature review
2.1 Holding companies
The structure of holding companies is one of the most important and best structures for meeting the objectives related to movement towards market-oriented economies. The holding companies can be the most effective factors for moving from a closed and centralized system towards a market-oriented system (Kumar, 1992). The holding company is the most effective method and tool that can be used for simultaneously controlling and managing two or several units, that have already been independent (Kumar, 1992). But what seems important in these structures is the existence of one index and main unit as the thinking brain and superpower in carrying out strategic duties and providing relative freedom in achieving the goals.

There are numerous definitions for holding companies, but the most important are the following:

- A holding company is a company that is planning to control the operations related to physical assets through acquisition of shares and bonds of other companies (Splawn, 1935).
- Holding companies are structures that are able not only to reduce the impacts of laws and regulations, but also to properly satisfy legal requirements, and they can work out a correct analysis of the requirements and needs (Kerr, 1983).
- The simplest definition of a holding company is that a holding company is created with the purpose of acquisition of the shares of other companies (Kumar, 1992).
• The holding company is an investment, managerial and specialized company, which holds a relatively large portion of the shares of other companies, and due to such portion of interest, it can manage and control such companies (Kumar, 1992).

• It is a company formed with the goal of controlling other companies, through acquiring the major part of the voting right. This term is commonly used for any other company that controls several subsidiaries (US Department of Energy, 1993).

• A holding company is a company that is able to interfere in its subsidiaries and use such control in controlling the subsidiaries (Goold et al., 1994).

• A holding company is a company which is the shareholder of one or several companies and controls their policies as a central company (Angus, 2004).

The Britannica Online Encyclopedia (2009) gives the following definition for holding company:

A holding is a company that has sufficient voting right for controlling one or more companies. If a holding company is established only with this objective, it is called a Pure Holding Company. But, if it operates in existing businesses, it is called Operating Holding Company.

Based on the foregoing definitions, the nature of a holding company can be stated as follows:

A holding company is by nature, the representative of the organization for all beneficiaries. It is an agent who makes the organization unique and distinguished and it forms communications, designs, cultures, behaviors, structures, nature of industry and the strategy of the company. So the nature – in principal – is linked with the characteristic of the organization and its image (Melewar and Karaosmanoglu, 2006).

Various classifications have been presented for holding companies. Below, the most important classifications based on different researches are mentioned:

*Investment holding company.* This class of holding company gains its profit only through the volume of investment in its own subsidiaries. In this type of holding company, the investment is only made by the holding company and the holding company shall not be responsible for controlling and managing the company. The most important parameter in this type of holding company is the time period for receiving profit and return on investment period (US Department of Energy, 1993). The most important investment holding companies include investing companies with fixed capital, investing companies with variable capital, investing trusts, diversified activity companies, investing companies in landed properties and real estates (Hanafizadeh et al., 2009).

*Managerial holding company.* This class of holding company, in addition to investing in shares of their subsidiaries, can affect their processes and have transactions with them. They also have the ability to manage and control them (US Department of Energy, 1993). In these companies, the most important processes include management of product-service management, promoting trademark, supporting negotiations, financial management, dispute settlement, standardization, evaluation of performance of subdivisions and managers, capacity planning, rendering
common services to subdivisions, obtaining joint projects, crisis management, development of subdivisions’ exports, continuous creativity and innovation (Hanafizadeh et al., 2008; Hanafizadeh and Moayer, 2006).

Managerial holding company with uniform subsidiaries. This group of holding companies has a series of subsidiaries that operate in one specific and almost similar industry.

Managerial holding company with non-uniform subsidiaries. This type of holding company has a series of subsidiaries that operate in different fields and industries. This class of holding companies is divided into two groups: non-chain and chain holding companies (Hanafizadeh and Shafiei Nikabadi, 2009).

Managerial holding company with non-chain uniform subsidiaries. In this type of holding companies, there are subsidiaries that operate in several different fields and industries. Good examples of this group are IDRO and MOSTAZAFAN Foundation. The activities of this holding company includes different production and trade fields (the subsidiaries do not create a supply chain) (Hanafizadeh and Shafiei Nikabadi, 2009).

Managerial holding company with chain uniform subsidiaries. These are the companies that operate in different fields, but are related to product or final products supply chain (Hanafizadeh and Shafiei Nikabadi, 2009). Examples of this type of holding company are automobile manufacturing companies such as Mazda, Citroën, Iran Khodro, etc. (Institute of Standards and Industrial Research of Iran, 2009). The major characteristic of this type of holding companies is the existence of several subsidiaries that together create a value chain (supply chain). In such structures, the chain can exist in one of the following forms (Chavez et al., 2003):

- The holding company maintains the tracking stock and the central office of the holding company has the power to control and vote on the subsidiaries and the assets of the subsidiaries are not separate from the assets of the holding company (like DLJ Direct Co.).
- The holding company maintains the majority of shares and voting right for controlling. The holding company sells the minimum shares to public (10 to 20 percent of the shares). In this case, there are separate, but common and overlapping boards and most of the chairs are occupied by the members of the holding company who have the highest voting right (like Barnes and Nobel Co.).
- The holding company proportionally maintains the shares of supply chain and the subsidiaries have separate boards, on which the holding company exerts no control. In this case, the holding company separates itself from subsidiaries and shall be the holder of part of their shares (like AT & T Company).

The interesting point is that, among studies conducted, no specific study has been performed on the identification of factors affecting selection of e-business model for holding companies.

2.2 E-business
2.2.1 Business models. Timmers (1998) defined a business model as a description of the potential benefits for various business actors and a description of the sources of revenues (Timmers, 1998). Makinen and Seppanen (2007) positioned the concept of business model between inputs used by a firm to gain economic outputs (Makinen and
Seppanen, 2007). Business models describe the key component of a given business and include customers, competitors, the offering, activities and organization, resources and factor market interaction (Hedman and Kalling, 2003). The business model can be considered as some sort of architecture for products, services and flow of information that include a description of different business agents, their role, potential advantages for any of these agents and their income resources (Rowley, 2002). It has two basic components: actors, and relationship between actors (Papakiriakopoulos et al., 2001) and has six functions:

1. articulating the value proposition;
2. identifying a market segment;
3. defining the structure of the value chain;
4. specifying the revenue generation mechanism;
5. describing the position of the firm within the value network; and
6. formulating the competitive strategy (Montro-Sanches, 2009).

A business model is an organization’s approach to generating revenue at a reasonable cost, and incorporates assumptions about how it will both create and capture value (Gambardella and McGahan, 2009). Doganova and Eyquem-Renault (2009) defined the business model as a material object, as a scale model of new venture, instead of treating it as a more or less faithful description of a reality beyond itself (Doganova and Eyquem-Renault, 2009). At least, Zott and Amit (2009) defined a business model as depicting “the content, structure, and governance of transactions designed so as to create value through the exploitation of business opportunities” (Zott and Amit, 2009).

2.2.2 E-business models. But today, on appearance of new technologies and the ability to use information and communications technologies, new business models have come into existence. They are described as follows.

The e-business models are descriptions of work processes utilized in virtual or electronic environments like the world wide web (Botto, 2003). These models describe the roles and relations between customers, consumers, partners and providers, and seek determination and identification of main courses of products, information and money and identification of major advantages for business shareholders and participants. They use the internet to carry out transactions and create value for customers and other beneficiaries (Currie, 2004) and they can facilitate analysis, testing and validation of a company’s strategic choices in an industry (Shafer et al., 2005) and have four major elements:

1. coordination (the management of dependencies among activities);
2. cooperation-competition;
3. customer value; and
4. core competence (Papakiriakopoulos et al., 2001).

Takao and Matsumoto (2004) define e-business as a collection of business activities including using computers for the exchange and storage of all forms of information in corporate activities, as well as client transactions, internet communication, and data management, using information systems built on web site (Takao and Matsumoto,
E-business is described as attracting customers and merchants for trade transactions through automation of transactions, exchanges, communications and interactions using communication and computerized technologies in line with economic goals including such inter-organizational systems like telephone, internet, e-mail or local computer fields in order to support online trade transactions (Hanafizadeh and Rezaei, 2008). Therefore, the goal of this type of new business can be regarded as automating the business transactions and work processes (Andrew et al., 2006). E-business is therefore seeking both digitalization of the value chain and business processes, and achieving financial and functional elevations in the organization through creating new values for the organizations (Currie, 2004). As a result, the most important performance expected from these models is their internal relation and interaction with other systems involved. Following automation of different processes in the organization, many useless processes are eliminated. The result is that the efficiency is promoted through increasing the speed of processing, achieving a level of automation and reducing the level of risks (Rodgers et al., 2002). The system finally improves the relations and increases the loyalty of customers and business partners and strengthens the organization’s move towards profitability and competitive advantage.

In general, such significant advantages like increased sales, establishment of confidence, inclusive knowledge from the trade mark, rendering constant and improved services, providing relevant and updated information, development of business, constant and permanent relation with all beneficiaries (Haig, 2001), increase in the quality and flexibility of the information and the competitive advantage (Auramo, 2005) and enhancing exports (the internet power lies in its connectivity: the more connections are useful in exports) (Morgan-Thomas and Bridgewater, 2004) can be mentioned for e-business models. The e-business models can increase financial and non-financial value more than business models (Takao and Matsumoto, 2004).

Each e-business model consists of four principal columns, outlined as follows (Osterwalder and Pigneur, 2002):

1. **Innovation in product.** What is the company’s field of activity and what type of innovation and value does it present to the market?
2. **Customer relation.** Who are the target customers? How is the product delivered to them? How can we establish a powerful relation with them?
3. **Infrastructural management.** How and at what rate does the company address infrastructural and logistic issues and who assists the company in doing so? Which virtual companies does it use? This aspect is essential for creating value and protecting useful mutual relations with customers.
4. **Financial issues.** How does the company gain income (through transactions, membership fees, advertisement, receiving commissions or granting licenses, etc.)? What is the company’s cost model (cost of product sales, operating costs, marketing and administrative costs, etc.)? This aspect of e-business is the result of the transaction between previous aspects.

In this regard, it can be argued that the influence of e-business on business models is exerted at three levels: resources, organization’s activities, and presenting proposals.
(Hedman and Kalling, 2002). E-business may have influence on all resources including money, knowledge, facilities and equipments, qualifications, skills, individuals, markets and even sales as well as launching new product; it can even create new resources like software and protocols. These resources are utilized to establish coordination and control of work distribution and activities of a business model (Hedman and Kalling, 2002). As a result, they create developments in organized activities and processes and finally the process of launching different products and services. So we can say that e-business is part of business models that can be employed in different parts of business models.

2.2.3 Criteria for classifying e-business models. There are different criteria and indices for classifying different types of e-business models. Amberg and Schroder (2007), in their research on e-business models in German music market, evaluated and analyzed e-business models with regard to four aspects:

1. type and volume content;
2. price of content;
3. right of sales; and
4. additional services.

They classified e-business models according to two criteria:

1. type of compensation; and
2. dependency on supplier or its technology.

The most important criteria are:

- income and the role in value chain;
- interaction and integration pattern in value chain;
- functional integration and the degree of innovation;
- core activities and the balance of price/value;
- economic control (hierarchical and self-organizing market) and integration in value; and
- sourcing (what do the entities buy and how do they buy it?). This can be in two forms: systematic[1] and spot[2]) (Pateli and Giaglis, 2003).

Also, E-business models can be expressed in terms of many criteria like suppliers, value proposition, process and activities (Van Der Vorst et al. 2002), IT systems and IT architectures, technical platforms, value chain of suppliers and buyers (Kshetri, 2007).

By reviewing the studies conducted on e-business, it can be understood that these studies only introduce those factors and do not address the degree of importance of each of these factors in various e-business models. Also, they do not focus on the evaluation of the importance of these criteria in various companies.

In general, they can be divided into five categories: economic control, functional integration (internal integration), supply chain integration (external integration), innovation, and sourcing (Hayes and Finnegan, 2005).

In their study, Hayes and Finnegan (2005) only refer to five key criteria and do not address the details. In the following, through a review of the literature, an attempt has been made to define each of these criteria using specific factors.
Below, each of these categories is discussed briefly:

(1) **Economic control**: it refers to the degree of hierarchy and self-organization of a market. In order to functionalize this feature, Porter’s 5 Competitive Forces are analyzed. These forces determine an organization’s competition position and profitability potential in an industry (Loukis et al., 2008). These five forces are as follows:

- **Suppliers’ bargaining power**: it includes such issues like domination on the raw materials market, share of raw materials in total assets, expenses of transformation, the volume of transactions and centralization of the suppliers (Porter, 1998).

  \[H1\] “Suppliers’ bargaining power” is one of the most important factors in selecting an appropriate e-business model in holding companies with a chain structure in the automobile industry.

- **Buyers’ bargaining power**: it includes customers’ domination over products, diversified products, the inclination to use substitute goods, and backward merging (Porter, 1998).

  \[H2\] “ Buyers’ bargaining power” is an important factor in selecting e-business model in holding companies with a chain structure in the automobile industry.

- **Threatening the newcomer competitors**: this includes such issues like the quality of comparison, distinction, capital needs, variable expenses, access to distribution channels and raw materials, public policies and access to learning curve (Porter, 1998).

  \[H3\] “Threat of industry new comer competitors” is an important factor in selecting e-business model in holding companies with a chain structure in the automobile industry.

- **Competition**: it includes such issues like sensitivity of price, the importance of trade mark, number and power of competitors in market control (Porter, 1998).

  \[H4\] “Competition among existing companies in industry” is an important factor in selecting e-business model in holding companies with a chain structure in the automobile industry.

- **Products replacement power**: it includes replacing products with other products of other companies (Porter, 1998).

  \[H5\] “Threat of replaced products or services in industry” is an important factor in selecting an e-business model in holding companies with a chain structure in the automobile industry.

(2) **Functional (internal) integration**: it refers to the degree of integration and coherence among all activities in a business model (Hayes and Finnegan, 2005).

(3) **Supply chain (external) integration**: it refers to the degree of integration of functions (duties) and the processes of a business with its other members in a supply chain (Hayes and Finnegan, 2005).

In order to evaluate different types of integration, the enterprise resources planning (ERP) system can be analyzed. ERP system acts as a business...
management system. This system comprises integrated sets of comprehensive software that can be used to manage and integrate all business processes and functions within an organization (Stemberger and Kovacic, 2008). ERP systems enable supply chain partners to act as a single entity and configure their operations on a shared basis (Rajaguru and Matanda, 2009). In general, the total processes and duties in the organization’s resources planning systems can be divided into four categories (Chen, 2001):

- **Production, operations and logistics**: this category includes production planning, materials need and capacity planning, inventory, quality assurance, transportation, repairs and maintenance, and distribution.
  
  \( H6 \). Integration of “production, operation and logistic activities” with other internal processes of the holding company is an important factor in selecting e-business model.

  \( H7 \). Integration of “production, operation and logistic activities” with other processes of the members of the supply chain of the holding company is an important factor in selecting an e-business model.

- **Sales and marketing**: this category includes placing order, sales planning, contracts, distribution channels, pricing, and after-sales services.

  \( H8 \). Integration of “sales and marketing activities” with other internal processes of the holding company is an important factor in selecting an e-business model.

  \( H9 \). Integration of “sales and marketing activities” with other processes of the members of the supply chain of the holding company is an important factor in selecting an e-business model.

- **Financial**: it includes cost accounting, profit analysis, general ledger, cash flow management; cash received and paid investment and budgeting.

  \( H10 \). Integration of “financial activities” with other internal processes of the holding company is an important factor in selecting an e-business model.

  \( H11 \). Integration of “financial activities” with other processes of the members of the supply chain of holding company is an important factor in selecting an e-business model.

- **Human resources**: it includes particulars of the employees, human resources planning, job classification and training.

  \( H12 \). Integration of “human resources activities” with other internal processes of the holding company is an important factor in selecting an e-business model.

  \( H13 \). Integration of “human resources activities” with other processes of the members of the supply chain of the holding company is an important factor in selecting an e-business model.

(4) **Innovation**: organizational and technological innovations are considered to be a key parameter for improving the competitive function in organizations and countries and also for the long-term growth of the world’s economy (Freeman, 1990). Chong (2008) showed that innovation characteristics are important
elements in successful e-business implementation. In their innovation model, Tornatzky and Fleischer (1990) classified innovation into three dimensions, namely, organizational, technological, and environmental (Tornatzky and Fleischer, 1990). Also, Hayes and Finnegan (2005) argued that the effective factors on innovation have had four dimensions: development of IT tools, centralization and flexibility in duties, degree of competitive price, and the degree of centralization in market (market share). The first item is related to technological dimension, the second to organizational parameters, and the last two items are related to the environmental aspect.

H14. “Development of information technology tools” in managerial holding companies with a chain structure in the automobile industry is an important factor in selecting an e-business model.

H15. “Degree of decentralization and flexibility in duties” in managerial holding companies with a chain structure in the automobile industry is an important factor in selecting an e-business model.

H16. “Degree of competitive price” in managerial holding companies with a chain structure in the automobile industry is an important factor in selecting an e-business model.

H17. “Degree of centralization in industry (market share)” in managerial holding companies with a chain structure in the automobile industry is an important factor in selecting an e-business model.

(5) Sourcing: It refers to a series of procedures through which the organization supplies its data. Sourcing can be either systematic or spot (Hayes and Finnegan, 2005).

H18. “Supply of producing and operating resources” in managerial holding companies with a chain structure in the automobile industry is an important factor in selecting an e-business model.

E-businesses can be studied and classified from different viewpoints. Table I illustrates an example of different classifications provided by different researchers. One of the most common and generic e-business models, which are also discussed as a reference model in this research, was first discussed by Timmers (1999) in his book entitled Electronic Commerce. In this model, based on such criteria as the degree of functional integration and the degree of innovation, 11 types of electronic businesses are introduced:

(1) E-shop. This model is used in the companies that are still in the first stages of their growth and development for introducing and promoting the company and their goods and services. In general, any company that initiates a web site with the purpose of only having the internet presence has actually created a primary form of e-shop. The potentiality for receiving and processing of orders and the possibility for online payment have increased the value of the primary form of this model and are combined with traditional marketing channels. If the number of users increases in this type of shops, the possibility for executing marketing techniques on a one-by-one basis will also increase. The most
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<td><strong>Generic e-business models</strong></td>
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<td><strong>Whole-of-enterprise</strong></td>
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**Timmers (1999)**

**Lawrence et al. (2000)**

**Stewart and Zhao (2000)**

**Applegate (2001)**

**Rayport and Jaworski (2001)**

**Weill and Vitale (2001)**

**Tezalatidou and Pitsou (2001)**

**Kinder (2001)**

**Rappa (2003)**

**Weil and Vitale (2001)**

**Tsalgatidou and Pitoura (2001)**

**Kinder (2001)**

**Rappa (2003)**

**Lumpkin and Dess (2004)**

**Mahadevan (2004)**

**Cagle and Hodge (2004)**

**Janssen et al. (2008)**
important advantages of this model include increased demands, reduction of expenses for global presence, reduction of sales expenses and promotional activities, more selection right, quick access to information, convenience in selecting and purchasing and round-the-clock clearance of the products (Timmers, 1999).

(2) E-procurement. This model includes procurement and supply of products and services in an electronic form. Large and governmental companies are very willing to use this model. The principal source of income in this model is the reduction of processing expenses and participation in tenders. The most important advantages of this model include the existence of more choices for the suppliers, better quality, improved supply of products, reduced procurement costs, the possibility for increasing participations and cooperation in specialized fields, reduced time for procurement of materials, easy access to more opportunities with regard to submitting proposals in tenders at the international level (Timmers, 1999).

(3) E-mall. E-mall in its primary form includes a series of e-shops and focuses more on a specific and famous brand or trade mark. The existence of a common, guaranteed, and safe payment process can also increase its potentiality. When these virtual markets operate professionally in one section of the market, especially in industrial markets, more added values can be created using virtual community facilities such as discussion groups, consumer groups, and FAQs. In this model, the source of income is the membership fee (including the costs of software, hardware, start-up and maintenance of the site and the service fees), advertisement and commission on transactions (as the mall processes and prepares the payments). Significant advantages of this model are the same as advantages pointed out for e-shops. In addition, access to more e-shops is provided and they are easy and simple to use. In this model, confidence and trust are greater, and as a result the readiness for effecting a bargain is increased. The specialized facilities such as payment methods and numerous visits from the site due to the existence of different e-shops can also be mentioned in this regard (Timmers, 1999).

(4) E-auctions. E-auctions have been considered as a paragon of the net-based economy and the most successful e-businesses (Shin and Park, 2009). E-auctions include mechanisms similar to those used in traditional auctions. They can also be accompanied by multimedia introduction and supply of the products. However, they are not usually limited to this and it is also possible for them to include the integration between auction and execution of the contract, payment and clearance of the goods. The most important sources of income for setting up this model are sale of technology, commission on transactions, exchanges and advertisement. The most important sources of income for the suppliers include reduction of inventory level, improved use of production capacity and reduction of sales overheads. The significant benefits of this model for both the suppliers and the buyers include increased efficiency, time saving, reduction of physical transportation until the transaction time and the possibility for sourcing at international level. In this model, because of low costs, the possibility for supply of a small volume of products at a small price is provided (Timmers, 1999).
Virtual community. The value of each virtual community is determined by its members, who can be either customers or business partners. These virtual communities are used to establish loyalty among customers and facilitate obtaining feedback from them. In this model, added value can be established through creating personal profiles from the customers. In this model, the sources of income are membership fees and advertisement (Timmers, 1999).

Collaboration platforms. This model is used to provide tools, devices and information environment for establishing cooperation and collaboration between institutes and organizations. This model can focus on a specialized area of functions including designing, engineering and/or on a logistic project from the virtual group including a group of consultants. The advantages of this model include administration by the members and optimum use of membership fees in managing and selling the tools, professional and specialized devices like designing, document and workflow management (Timmers, 1999).

Third-party marketplace. This model is suitable for those companies that outsource their electronic marketing activities to other companies. These markets are often considered as an additional and immediate channel and include physical distribution centers. The common feature of these markets is that they establish the minimum relation between suppliers and buyers through electronic catalogues. The most important features of this model include creation of trade mark, payment, logistics, and obtaining and processing the orders as well as executing a wide and complete range of safe transactions (Timmers, 1999).

Value chain integrators. This model is mainly focused on integrating different levels of value chain, hoping to use existing information flow among these different levels and aimed at establishing value. In this model, income is gained from consultation fees or receiving commissions on transactions (Timmers, 1999).

Value chain service providers. The critical goal of this model is to achieve competitive advantage in a professional activity in the value chain including electronic payments or logistics. The significant example of this model is used in FedEx Co. that supports a web-based logistics (Timmers, 1999).

Information brokerage. A new and wide range of information services concerns the way in which value is established for the huge volume of existing data in information networks. Search engineers like Yahoo!, customer profiling, introducing job and business opportunities and investment advices can be mentioned in this respect. In this model, it is common to use advertising campaigns. Information or consultation fees can be paid in the form of membership fees or enrolment fees or based on the number of times each service is used (Timmers, 1999).

Trust services. These services are rendered by electronic license-issuing centers or other legal authorities. The sources of income in this model are membership fees for using the services, in addition to the cost of software and consultation fees (Timmers, 1999).

In Figure 1, the horizontal line illustrates the degree of innovation. It shows the models ranging from lowest degree of innovation (right) to highest degree of innovation (left).
The vertical line shows the degree of integration among different duties and functions, ranging from mono-duty (bottom) to multi-duty work models.

Following their researches for analyzing different types of business models, Hayes and Finnegan (2005) achieved the results presented in Table II based on the five criteria of economic control, functional (internal) integration, supply chain (external) integration, innovation and sourcing.

2.3 Research synthesis
We can find extensive and different researches on small and medium enterprises’ (SMEs) adoption of e-business. A total of 120 journals published articles about e-business adoption in SMEs from 2003 up to 2006 and at least 28 so far in 2007-2008 (Parker and Castleman, 2009). On the other hand, there are many articles on e-business and e-business models (Like Table I), but we could find only articles on deciding on e-business models selection.

In his studies, Timmers (1999) has classified e-business models solely based on the two factors: functional integration and degree of innovation, and have not considered other aspects. He also has not embarked on investigation and determination of appropriate e-business models in various companies. Hayes and Finnegan (2005), too, only address the five general criteria and do not dwell on the details of various e-business models. They classify Timmer’s e-business models on the basis of these five criteria. These five criteria are extensively defined using 18 factors and presented as 18 hypotheses in the present study. An attempt has also been made to identify important factors in determination of an appropriate e-business in managerial holding companies with a chain structure in the auto industry.
<table>
<thead>
<tr>
<th>Sourcing</th>
<th>Innovation</th>
<th>Supply chain integration</th>
<th>Functional integration</th>
<th>Economic control</th>
<th>Business models</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systematic</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>E-shop</td>
</tr>
<tr>
<td>Systematic</td>
<td>Medium</td>
<td>Medium</td>
<td>Low</td>
<td>Low</td>
<td>E-mail</td>
</tr>
<tr>
<td>Systematic</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>E-procurement</td>
</tr>
<tr>
<td>Spot/systematic</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>Low</td>
<td>E-auction</td>
</tr>
<tr>
<td>Not applicable</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Information brokerage</td>
</tr>
<tr>
<td>Not applicable</td>
<td>Medium</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Trust services</td>
</tr>
<tr>
<td>Spot/systematic</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>Third party marketplace</td>
</tr>
<tr>
<td>Not applicable</td>
<td>High</td>
<td>High</td>
<td>Medium</td>
<td>Medium</td>
<td>Virtual communities</td>
</tr>
<tr>
<td>Not applicable</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>Value-chain integrators</td>
</tr>
<tr>
<td>Not applicable</td>
<td>High</td>
<td>Medium</td>
<td>Medium</td>
<td>Low</td>
<td>Value-chain service providers</td>
</tr>
<tr>
<td>Not applicable</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>Low</td>
<td>Collaboration platforms</td>
</tr>
</tbody>
</table>

**Source:** Hayes and Finnegan (2005)
Therefore, it can be concluded on the basis of a review of the literature that the main motive of the present study is to identify important factors in each e-business model and their degree of importance in various e-businesses, as well as evaluating the importance of each of these indices in various companies in order to determine the appropriate e-business model. In this respect, the determining factors in selecting the type of appropriate e-business model are identified and then they are evaluated within the context of managerial holding companies with a chain structure.

3. Research conceptual model
Using the framework of Hayes and Finnegan (2005) and a literature review, five criteria existing in this framework have been expanded. Figure 2 illustrates these five criteria and the 18 factors related to each criterion in line with the research. Aspects in the left side are those five criteria introduced by Hayes and Finnegan. Then, according to the literature review conducted, these criteria are expanded and defined by 18 factors which are shown on the arrows. Through survey and hypothesis testing, these factors are assessed and factors affecting the selection of an appropriate e-business model in holding companies with a chain structure are extracted. Then, by a case study, the confirmed factors are measured in Iran Khodro Co. and the appropriate e-business model for Iran Khodro holding company is extracted.

4. Research methodology
This study is an applied study conducted as a survey and case study. First, the factors affecting selection of an appropriate e-business model in managerial holding companies with a chain structure in the auto industry are identified through a survey and by testing hypotheses. This step is taken by the help of experts in the field of designing business models in Iran Khodro and SAIPA companies. These companies are the largest holding companies with a chain structure in the auto industry in Iran having more than 98 percent market share. Then, in the second step, these factors are measured as a case study by the related experts in Iran Khodro Co. so that the appropriate e-business model can be determined for this managerial holding company with a chain structure according to Table II. Figure 3 illustrates research steps.

Questionnaire was used to investigate the research hypotheses. In order to measure the external validity of the measurement tools, the prepared questionnaire was distributed among a number of experts from statistical community. Their viewpoints regarding the degree of their agreement with the content of the proposed framework were received in terms of quantitative figures. In the next step, the structural problems of the questionnaire were identified and necessary revisions were made for the questionnaire to meet external validity. Cronbach Alpha index was used to measure the reliability of the designed questionnaire; the reliability was equal to 0.85 which is more than the figure 0.7. Therefore, the reliability of the questionnaire is confirmed (Hair et al., 1995). Kaiser-Mayer-Olkin (KMO) index was also used to measure the sampling adequacy (Hutcheson and Sofroniou, 1999). The degree of this index is 0.616, and since the figure is higher than 0.6, the sampling adequacy of the research was also confirmed.

In order to avoid data bias and make sure that the responses are sensible, every effort was made to first of all choose the most significant and the oldest holding companies with a chain structure in the Iranian auto industry. Then, the people in
Figure 2. Research conceptual model

Determining important factors in selecting an appropriate e-Business Model in Managerial Holding companies with chain structure in Auto Industry

Survey Research

Measuring approved factors

Case Study

Selecting an appropriate e-Business Model in Iran Khodro Co.

Economic Control
- Threatening the new Competitors
- Suppliers Bargaining Power
- Buyers Bargaining Power
- Threat of Industry New enter Competition
- Treat or Replace product or Services in Industry

Functional (Internal) Integration
- Internal Integration of production, operations and logistic activities
- Internal Integration of Sales and Marketing activities
- Internal Integration of Financial activities
- Internal Integration of Human Resources activities

Supply-chain (External) Integration
- External Integration of production, operations and logistic activities
- External Integration of Sales and Marketing activities
- External Integration of Financial activities
- External Integration of Human Resources activities

Innovation
- Development of Information Technology tools
- Degree of decentralization and flexibility in duties
- Degree of competitive price
- Degree of centralization in industry

Sourcing
- Supply of producing and operating resources
charge of designing business models were randomly selected. Over 75 percent of the experts held postgraduate degrees and all of them had more than five years of experience in the field of designing business models in the auto industry.

5. First step. The framework for selecting an e-business model in managerial holding companies with a chain structure in the automobile industry

5.1 Participants of the first step
The participants of the first step in this research consisted of experts of Iranian managerial holding companies with a chain structure in the automobile industry. Only two Iranian reliable automobile manufacturing companies (Iran Khodro and Saipa Companies) have had the highest share of the Iranian automobile market (more than 98 percent of market share of automobile market in Iran), and the backgrounds of these two companies are longer than other companies and they have a holding and chain structure, so sampling was carried out from the experts related to the subject of research in these two companies.

In Iran Khodro Co., there are two departments who are responsible for designing the business models: Organization Strategy and Consolidated Planning Administration (with 22 experts) and Product Planning and Strategy (with 16 experts). In Saipa, Center for Studies and Strategic Planning (with 11 experts) has the same responsibility (please note that only 75 percent of the respondents had postgraduate degrees and more than five years’ experience). The number of questionnaire received from the two departments of Iran Khodro and Saipa was 30 and 10, respectively.

5.2 Statistical tests
In order to study the hypotheses set forth in research, the mean test was utilized. This test is used for specifying whether a variable or a parameter has influence on the status of the subject of study or not. If the degree of reliability of this test (sig) is more than 5 percent, it indicates that the given hypothesis is not proved (Pallant, 2007).

The mean test was used to test the hypotheses of research. Table III shows the details of proof or non-proof of each parameter. The parameters having test reliability (sig) of more than 5 percent have not been proved. Out of 18 hypotheses proposed, three hypotheses of integration of human resources activities with other internal duties and processes of the holding company, integration of human resources activities with other
<table>
<thead>
<tr>
<th>Upper limit</th>
<th>Lower limit</th>
<th>Mean difference</th>
<th>Sig. (two-tailed)</th>
<th>Mean</th>
<th>t</th>
<th>Hypotheses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.19</td>
<td>0.61</td>
<td>0.900</td>
<td>0.000</td>
<td>3.9</td>
<td>6.324</td>
<td>Suppliers’ Bargaining Power</td>
</tr>
<tr>
<td>1.27</td>
<td>0.63</td>
<td>0.950</td>
<td>0.000</td>
<td>3.95</td>
<td>6.095</td>
<td>Buyers’ Bargaining Power</td>
</tr>
<tr>
<td>1.00</td>
<td>0.30</td>
<td>0.650</td>
<td>0.001</td>
<td>3.65</td>
<td>3.741</td>
<td>Threat of Industry New Comer Competitors</td>
</tr>
<tr>
<td>1.16</td>
<td>0.54</td>
<td>0.850</td>
<td>0.000</td>
<td>3.85</td>
<td>5.512</td>
<td>Competition among Existing Companies in Industry</td>
</tr>
<tr>
<td>.98</td>
<td>0.27</td>
<td>0.625</td>
<td>0.001</td>
<td>3.63</td>
<td>3.513</td>
<td>Threat of Replaced Products or Services in Industry</td>
</tr>
<tr>
<td>1.28</td>
<td>0.67</td>
<td>0.975</td>
<td>0.000</td>
<td>3.98</td>
<td>6.512</td>
<td>Internal Integration of Production, Operation and Logistic Activities</td>
</tr>
<tr>
<td>1.50</td>
<td>0.95</td>
<td>1.225</td>
<td>0.000</td>
<td>4.23</td>
<td>8.988</td>
<td>Internal Integration of Sales and Marketing Activities</td>
</tr>
<tr>
<td>1.07</td>
<td>0.53</td>
<td>0.800</td>
<td>0.000</td>
<td>3.8</td>
<td>5.929</td>
<td>Internal Integration of Financial Activities</td>
</tr>
<tr>
<td>.53</td>
<td>–0.08</td>
<td>0.225</td>
<td>0.141</td>
<td>–</td>
<td>1.503</td>
<td>Internal Integration of Human Resources Activities</td>
</tr>
<tr>
<td>1.18</td>
<td>0.62</td>
<td>0.900</td>
<td>0.000</td>
<td>3.9</td>
<td>6.534</td>
<td>External Integration of Production, Operation and Logistic Activities</td>
</tr>
<tr>
<td>1.31</td>
<td>0.79</td>
<td>1.050</td>
<td>0.000</td>
<td>4.05</td>
<td>8.149</td>
<td>External Integration of Sales and Marketing Activities</td>
</tr>
<tr>
<td>.84</td>
<td>0.31</td>
<td>0.575</td>
<td>0.000</td>
<td>3.58</td>
<td>4.309</td>
<td>External Integration of Financial Activities</td>
</tr>
<tr>
<td>.42</td>
<td>–0.17</td>
<td>0.125</td>
<td>0.391</td>
<td>–</td>
<td>0.868</td>
<td>External Integration of Human Resources Activities</td>
</tr>
<tr>
<td>1.33</td>
<td>0.82</td>
<td>1.075</td>
<td>0.000</td>
<td>4.08</td>
<td>8.530</td>
<td>Development of Information Technology tools</td>
</tr>
<tr>
<td>.41</td>
<td>–0.16</td>
<td>0.125</td>
<td>0.376</td>
<td>–</td>
<td>0.896</td>
<td>Degree of decentralization and flexibility in duties</td>
</tr>
<tr>
<td>1.35</td>
<td>0.70</td>
<td>1.025</td>
<td>0.000</td>
<td>4.03</td>
<td>6.325</td>
<td>Degree of Competitive Price</td>
</tr>
<tr>
<td>1.04</td>
<td>0.46</td>
<td>0.750</td>
<td>0.000</td>
<td>3.75</td>
<td>5.278</td>
<td>Degree of centralization in industry (market share)</td>
</tr>
<tr>
<td>1.31</td>
<td>0.69</td>
<td>1.000</td>
<td>0.000</td>
<td>4</td>
<td>6.583</td>
<td>Supply of producing and operating resources</td>
</tr>
</tbody>
</table>
6. Second step. Case study
After approving the framework for selecting the e-business model in managerial holding companies with a chain structure in the automobile industry, each of the factors confirmed in the first step was measured in Iran Khodro Co. for identification of an appropriate e-business model.

Iran Khodro Co. is a managerial holding company with a chain structure. Iran Khodro Co. consists of subsidiaries which include designing and engineering companies (like Taam Iran Khodro), suppliers (like SAPCO), manufacturers (like Iran Khodro Industrial Group), and after-sales services (like ISACO) and in this way, Iran Khodro Holding Co. has formed a supply chain, over which it has control and supervision.

In order to measure each of the confirmed factors for every criterion in the subject of study, questionnaire, documents and interview were utilized. Table IV illustrates the related departments for measuring each criterion. Each criterion and its respective factors are evaluated in the relevant unit and according to the type of their speciality and responsibilities.

Based on a series of documents of deputy office for strategic planning, in terms of domestic currency (Rials) and number of shares, Iran Khdro’s shares are 57 percent and 47 percent, respectively. Considering this information, number 3 (based on a Likert range) was determined as a criterion of the intensity of centralization in the industry (market share).

Considering the interviews carried out with engineers of Group Strategy Dept in the Deputy Office of Strategic Planning of Iran Khodro Co., experts selected number 1.3 (based on a Likert range) for the criterion of intensity of competitive price. Their reasons for choosing this number was that the changes in price are not determined by Iran Khodro Co. and the prices are set by Auto High Council and the Pricing Committee, and there are not many changes in the prices; also the company is only allowed to price and change the price of tailored cars. Thus, they selected number 1.3 for this criterion, which is assessed through changes in the company’s products in the market.

The views of the top manager of the logistics department were used in order to specify the type of sourcing and the process for supplying resources. According to him, almost 80 percent of the products are manufactured products and 20 percent are operating products. All products are received from suppliers through negotiations and based on previous contracts and the company is planning to use the same procedure to purchase even its operating goods and procure the supplies it needs from the free market. Based on his views, number 4 (based on the Likert range) was selected for this criterion. Other cases are also measured on the basis of the questionnaire. The results obtained from the measurement of every factor identified in stage 1 are indicated in Table V.

7. Discussion
Table VI is obtained from the combination of the results available in Sections 5 and 6.
Appropriate e-business model

Figure 4.
Developed research model
Please note that after measuring each criterion in the departments under study, for better matching of the replies and the table presented by Hayes and Finnegan, the intervals ranging from 0-34 percent were considered “low”, those within the range of 35-69 percent were considered “Medium” and those ranging 79-100 percent were considered “high”.

Table IV.
Related departments for each criterion in case study

<table>
<thead>
<tr>
<th>Related departments</th>
<th>Cronbach alpha</th>
<th>Criterion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marketing research, market strategy planning, group strategy planning, Integration Group (SAP)</td>
<td>0.85</td>
<td>Economic controla</td>
</tr>
<tr>
<td>IT department of total Production System, IT training department, market strategy planning, group strategy planning, production aggregate planning department</td>
<td>0.78</td>
<td>Integration in internal and External processes of holding companyb</td>
</tr>
<tr>
<td>Interview with senior manager of logistics</td>
<td>–</td>
<td>Innovationc</td>
</tr>
<tr>
<td>Notes: a This criterion and its factors are evaluated by the questionnaire and with the contribution of all members mentioned in the column of related departments (12 specialists); b This criterion and its factors are evaluated by the questionnaire and with the contribution of all members of SAP group leadership (11 leaders of integration); c In order to evaluate the factor the degree of the development of IT tools, 32 of line and staff experts have been interviews by the questionnaire; d The sourcing method is determined by an interview by the senior manager of logistics</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table V.
Measure of each factor confirmed by research in Iran Khodro Co. (second step)

<table>
<thead>
<tr>
<th>Case study result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic control</td>
</tr>
</tbody>
</table>
| Suppliers’ bargaining power                                                      3.345
| Buyers’ bargaining power                                                         2.833
| Threat of industry new comer competitors                                           3.139
| Competition among existing companies in industry                                  2.417
| Threat of replaced products or services in industry                               2.333
| Internal integration                                                             |
| Internal integration of production, operation and logistic activities             1.926
| Internal integration of sales and marketing activities                           1.761
| Internal integration of financial activities                                      1.609
| External integration                                                             |
| External integration of production, operation and logistic activities             1.81
| Internal integration of sales and marketing activities                           1.489
| Internal integration of financial activities                                      1.518
| Innovation                                                                       |
| Development of information technology tools                                      3.527
| Degree of competitive price                                                       1.3
| Degree of centralization in industry (market share)                               3
| Sourcing                                                                         |
| Supply of producing and operating resources                                      4
<table>
<thead>
<tr>
<th>Category</th>
<th>Factor</th>
<th>Survey research coefficient</th>
<th>Case study results</th>
<th>Result for any factor</th>
<th>Result for any criterion</th>
<th>Result in based on Likert range</th>
<th>Percent</th>
<th>Degree/Type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Economic control</strong></td>
<td>Suppliers’ bargaining power</td>
<td>3.9</td>
<td>3.345</td>
<td>13.0455</td>
<td>53.468</td>
<td>2.817</td>
<td>0.563</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Buyers’ bargaining power</td>
<td>3.95</td>
<td>2.833</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Threat of industry new comer competitors</td>
<td>3.65</td>
<td>3.139</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Competition among existing companies in industry</td>
<td>3.85</td>
<td>2.417</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Threat of replaced products or services in industry</td>
<td>3.63</td>
<td>2.3333</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Internal integration</strong></td>
<td>Internal integration of production, operation and logistic activities</td>
<td>3.98</td>
<td>1.926</td>
<td>21.228</td>
<td>1.767</td>
<td>0.441</td>
<td>0.441</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Internal integration of sales and marketing activities</td>
<td>4.23</td>
<td>1.761</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Internal integration of financial activities</td>
<td>3.8</td>
<td>1.609</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>External integration</strong></td>
<td>External integration of production, operation and logistic activities</td>
<td>3.9</td>
<td>1.81</td>
<td>18.523</td>
<td>1.606</td>
<td>0.401</td>
<td>0.401</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>External integration of sales and marketing activities</td>
<td>4.05</td>
<td>1.489</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>External integration of financial activities</td>
<td>3.58</td>
<td>1.518</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Innovation</strong></td>
<td>Development of information technology tools</td>
<td>4.08</td>
<td>3.527</td>
<td>30.879</td>
<td>2.603</td>
<td>0.520</td>
<td>0.520</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Degree of competitive price</td>
<td>4.03</td>
<td>1.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Degree of centralization in industry (market share)</td>
<td>3.75</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sourcing</strong></td>
<td>Supply of producing and operating resources</td>
<td>4</td>
<td>4</td>
<td>16</td>
<td>4</td>
<td>0.8</td>
<td>0.8</td>
<td>Systematic</td>
</tr>
</tbody>
</table>

Table VI. General results of the research
The first column of Table VI (Survey research coefficient) shows the average opinions of the respondents on the importance of each of the approved factors. According to the information laid down in this column, it can be found that the factors of internal integration of sales and marketing activities, development of IT tools, external integration of sales and marketing activities, the intensity of competitive price and internal integration of production, and operation and logistic activities are highly important in determining the e-business in managerial holding companies with a chain structure in the automobile industry. Hence, the managerial holding companies with a chain structure in the auto industry are better able to consider these indices in order to achieve superior e-business models and prioritize improving these indices.

What seems very important in relation to Table VI is the high importance of the parameters related to integration. Yang and Su (2009) showed that ERP implementation has a significant effect on the companies, both large and small, within the global supply chain (Yang and Su, 2009). This is while the degree of this integration (from internal and/or external points of view) in Iran Khodro Co. is very low. The reason for this can be the weakness of establishing an organization's resources-planning system and establishing integrating systems. On the other hand, although IT tools have been relatively developed in the company, the potentiality of connecting automation islands in Iran Khodro Co. is very low. Also, due to the government's strong support from the automobile industry and lack of competition, and due to the exclusivity of this industry in the country, the intensity of competitive price in the automobile industry in Iran is low, with even relatively little bargaining power being seen for the buyers in this industry and the possibility for replacing diversified and new products and services within a specific price range in the automobile market relatively low.

Table VII is constructed through the combination of the results of Tables II and III. In this way, appropriate e-business models have been identified for the current status of Iran Khodro Co.

Appropriate models for this case (Iran Khodro Co.) include e-shops, e-malls, electronic auctions and electronic procurement. Nevertheless, the most conformable model for the present status of Iran Khodro Co. is the electronic procurement model. In continuation, a better explanation for initiating and establishing the model is presented as a research suggestion.

Electronic procurement can be referred to as automation of all sections of procurement process with the help of electronic tools (Department of Finance and Administration, 2006). Electronic procurement is a system in which the companies purchase and sell products through computerized systems and communication networks (Dai and Kaufman, 2006). In general, electronic procurement is the application of information technologies for facilitating purchases between the business and intercompany transactions in the affairs related to materials and services (Walker and Harland, 2008). The key targets, existing in establishing this electronic system include increasing the strategic power of procurement, reduction of operating measures and expenses, improved management of suppliers (Puschmam and Alt, 2005), transparency of processes, reduction of cycle time and increase of geographical outreach (Yu et al., 2008).

The implementation of this business model requires planning tools (such as cost analysis, contract management, supplier management, electronic auctions), procurement tools (such as electronic catalogues, purchase electronic orders,
<table>
<thead>
<tr>
<th>Appropriate e-business models</th>
<th>Sourcing</th>
<th>Innovation</th>
<th>Supply chain (external) integration</th>
<th>Functional (internal) integration</th>
<th>Economic control</th>
<th>Business models</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-mail</td>
<td>Systematic</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
<td>E-shop</td>
</tr>
<tr>
<td>E-procurement</td>
<td>Systematic</td>
<td>Medium</td>
<td>Low</td>
<td>Medium</td>
<td>Low</td>
<td>E-mall</td>
</tr>
<tr>
<td>Third party marketplace</td>
<td>Systematic</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>E-auction</td>
</tr>
<tr>
<td>Information brokerage</td>
<td>Systematic</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>Low</td>
<td>Information brokerage</td>
</tr>
<tr>
<td>Trust services</td>
<td>Spot/systematic</td>
<td>Medium</td>
<td>Medium</td>
<td>High</td>
<td>High</td>
<td>Third party marketplace</td>
</tr>
<tr>
<td>Virtual communities</td>
<td>Not applicable</td>
<td>High</td>
<td>High</td>
<td>Medium</td>
<td>Medium</td>
<td>Virtual communities</td>
</tr>
<tr>
<td>Value-chain integrators</td>
<td>Not applicable</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>Value-chain integrators</td>
</tr>
<tr>
<td>Value-chain service providers</td>
<td>Not applicable</td>
<td>High</td>
<td>Medium</td>
<td>Medium</td>
<td>Low</td>
<td>Value-chain service providers</td>
</tr>
<tr>
<td>Collaboration platforms</td>
<td>Not applicable</td>
<td>High</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>Collaboration platforms</td>
</tr>
<tr>
<td>Research result</td>
<td>Systematic</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>Research result</td>
</tr>
</tbody>
</table>

Table VII. Comparison of the research results with the reference model and identification of an appropriate model.
Ford and Volkswagen are two holding companies with a chain structure in the auto industry that have presented electronic procurement as their proper e-business model and pursue their activities through this model. Ford Co. is one of the automobile-manufacturing holding companies that have been using electronic procurement in establishing e-malls. Ford believes that the new system must be institutionalized within its other purchasing systems. On the other hand, Volkswagen, on establishing an electronic supplier link (ESL), was first looking for improving its own procurement processes, while this link can also be used in selecting suppliers (Howard et al., 2002). This factor can also be considered as confirming selection of electronic procurement in Iran Khodro Co. The only difference is that, in the present study, various criteria of identifying a proper e-business model in managerial holding companies with a chain structure are recognized within the framework of the study and the way of selecting a proper model for these companies is indicated.

Finally, it can be argued that selection of an appropriate e-business model requires a collection of various aspects. What is more outstanding in this study is that a major part of e-business criteria relates to the issue of integration of intra- and inter-organizational processes, because it integrates all processes throughout the chain and reduces abrupt changes in addition to joining various automation islands in the best way possible. The most important of these processes are integration of intra- and inter-organizational processes and marketing activities. Interestingly, internal and external integration of human resource processes is recognized as the set of factors having no effect on the selection of a proper e-business model in managerial holding companies. On the other hand, in the economic control criterion, the most important factor is bargaining power of the suppliers which shows that, in managerial holding companies in the auto industry, the bargaining power of the suppliers is greater than that of the purchasers. Besides, due to the relatively exclusive nature of the automobile market in Iran and high support of the government from this industry, the competition factors among the competitors of an industry and threat of alternative goods are the least important. In the innovation aspect, development of IT tools is one of the most important criteria. Surprisingly, the factors of decentralization and flexibility of the responsibilities of human resources are recognized as the set of factors having no influence on the selection of appropriate e-business model in managerial holding companies with a chain structure in the auto industry. This can be attributed to bureaucracies present in this kind of organization.

8. Conclusion and suggestions for further research
In today’s complicated world, it is essential to study e-business systems, because the existing processes in traditional businesses have developed and moved towards global and quick access, speed in total supply chain, and carrying out business electronically (Buckhold, 2000).

Since no specific studies have been conducted on the factors affecting selection of an appropriate e-business model in commercial or holding companies, the researchers intended to identify these factors in managerial holding companies with a chain
structure in the auto industry by expanding the conceptual model proposed by Hayes and Finnegan (2005) and expanding and operationalizing it in one particular type of company and industry. Then, the identified factors are measured and finally the appropriate e-business model for the given company is proposed. In this study, 18 different factors were identified for the five main criteria in identifying e-business models.

Using the survey conducted in the statistical sample (Step 1), only three factors of internal and external integration of human resources activities, flexibility, and decentralization in the responsibilities were identified as less important factors in identifying an appropriate model of e-business in managerial holding companies with a chain structure in the automobile industry. On the other hand, internal integration of sales and marketing activities, development of information technology tools, external integration of sale and marketing activities, strength of competitive price, internal integration of production and operation activities, are among the most important factors in determining an appropriate model for e-business in managerial holding companies with a chain structure in the automobile industry.

Finally, using the case study (Step 2), an appropriate model of electronic preparation was selected for Iran Khodro Co. The appropriate E-business model for Iran Khodro Company was e-procurement. Ford and Volkswagen are two holding companies with a chain structure in the auto industry that have presented electronic procurement as their proper e-business model and pursue their activities through this model. This result can also be considered as confirming selection of electronic procurement in Iran Khodro Co.

In future studies, the approach used in this research can be utilized to study the important factors in determining an appropriate e-business model in holding companies with other structures and to compare such factors in different types of holding companies or commercial companies.

Notes
1. It is special for those industries in which the contracts are often made with qualified suppliers (Cagle and Hodge, 2004).
2. SPOT: Mostly for standard products and goods that the customer wants to obtain from the market at the lowest cost and within shortest period of time (Cagle and Hodge, 2004).

References


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**Further reading**


**About the authors**

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