Journal of Pharmacoeconomics and Pharmaceutical Management
http://jppm.tums.ac.ir

Original Article

Identification of the business model components of the Iranian pharmaceutical companies

Mehdi Ebrahimi[1], Mohammad Taghi Taqhavi-Fard[2], Mohammad Reza Karimi-Alavijeh[1], Ali Asgar Halvaei[3*]

[1] *Department of Business Management, School of Management and Accounting, Allameh Tabataba'i University, Tehran, Iran*
[2] *Department of Industrial Management, School of Management and Accounting, Allameh Tabataba'i University, Tehran, Iran*
[3] *School of Management and Accounting, Allameh Tabataba'i University, Tehran, Iran*

ABSTRACT

Background: Today, the skill of business model analysis has become one of the key sources of competitive advantage and the development of innovative ideas in many industries. The purpose of this article is to identify and describe the business model dimensions and components of pharmaceutical companies as one of the most important strategic industries in any country.

Methods: In the first step, by studying theoretical literature, we obtained an early model of the dimensions and components of a business model. Then a qualitative method was used. We tried to find this primitive pattern with the requirements of pharmaceutical companies. In this regard, we conducted 19 in-depth interviews with managers and experts of eight human pharmaceutical companies. The qualitative data were analyzed using analogous content analysis.

Results: The results indicated that the business model of pharmaceutical companies consists of four main dimensions including value proposition, value receivers and interactions, value architecture, and received value. The first dimension consists of eleven components or attributes. The second dimension consists of three components. The third dimension consists of three components, and the fourth one consists of two components.

Conclusion: This research differentiated the business model of pharmaceutical companies in four main dimensions, so that the elements that make up each dimension are different from the elements in the business model of other industries.

Keywords: Practice management services; Drug industry; Product line management; Business coalitions

Citation: Ebrahimi M, Taqhavi-Fard MT, Karimi-Alavijeh MR, Halvaei AA. **Identification of the business model components of the Iranian pharmaceutical companies.** J Pharmacoeconomics & Pharm Manage 2016; 2(3-4): 64-70.

1. Introduction

The business model was introduced to the business literature in the early 90s, with the advent of Internet businesses, as a novel management concept, to describe and explain organizational value flow in simple language. Over the last two decades, the concept of business model extensively interested scientific and executive circles. The upward trend in the number of studies into the business model and its introduction to common language of managers and entrepreneurs validates this claim [1]. Achieving a competitive position in all industries is only possible through reinforcing responsiveness to ever-increasing environmental changes and making senior management awesome decisions, and this cannot be achieved except through the adoption of a suitable business model [2].

The business model simply refers to a business mechanism, which helps the company generates revenue for its survival. In fact, this model indicates how a company can generate values to convince customers to pay for its products and services [3].

If we regard the business model as the cornerstone of a company and include its strategic choices for value creation and absorption in a value network [4], lack of recognition of a suitable business model may cause the company to fail in achieving its objectives. And so, the adoption of an innovative business model is very essential for today's organizations in managing challenges of their current business model [5].

According to Schmid et al., business models are multidimensional, and thus their unique facets do not seem applicable in all industries and businesses [6]. Literature review on dimensions and components of business model suggests that many scientists hold opinions about the nature of business models; for example, Alt and Zimmermann considered missions, process, structure, revenues, legal issues, and technology as components of the business model [7], Stahler considered value propositions, product/service, value architecture, and revenue model [8] and Afuah and Tucci considered customer value, business area, pricing, income source, related activities, application, capabilities, and sustainability [9].

One of the most used and most recent models is Osterwalder and Pigneur business model. They believed that a business model can be well identified via nine major building blocks: value propositions, customer segment, customer relationships, key resources, key activities, key partnerships, revenue streams, channels, and cost structure. These nine elements cover four key business areas including

*Corresponding author. Tel.: +98 910 686 4590, Fax: +98 21 66808128, E-mail: asgar.h.a@gmail.com, Ali Asgar Halvaei
Article information: Received date: 25/02/2016, Accepted date: 02/05/2016, Available online: 14/12/2016

customers, product, infrastructure management, and financial aspects [1].

Previous studies on the business model of pharmaceutical companies have been conducted without performing academic or field research, and they only addressed and reflected the opinions and viewpoints of experts in this industry. For example, the PricewaterhouseCoopers' Health Research Institute's 'Pharma 2020, challenging business models–which path will you take?'-described four distinct business models for pharmaceutical companies based on the experience, knowledge, and observation of its specialists. The criterion for difference between these models was the degree of ownership or partnership in production processes [10]. In a review study, Sabatier et al. categorized business models of pharmaceutical companies into seven groups based on their active and independent role in each main stage of the drug value chain [11]. Ku, in a review paper, categorized the business models of pharmaceutical companies into four groups. First group includes experts in the search of compounds for in-licensing; second group focused on marketing specialty medicines to a limited number of clients; third group started as a generic company; and fourth group with a specific delivery technology knowhow [12].

Accordingly, none of the above studies precisely indicated the conduction of a field and independent research to identify specific dimensions and components of the business model of a pharmaceutical company; rather, they presented some business models for this sector based on different field of activities or mechanism of interaction between different sectors of the drug supply chain, according to opinions of experienced specialists.

Since pharmaceutical industry is one of the most advanced and most extensive consumer industry in the world, acquiring through knowledge of different aspects and unique features of their business models is highly significant. Nevertheless, there is not any independent in-depth field study in the field of management and business on this type of business models. As a result, this study intended to investigate specific features of business models adopted by pharmaceutical companies after conducting a brief review of their concepts and opinions of various scientists on its facets and components, using the comments made by experts and individuals involved in this industry.

2. Methods

This was a qualitative study, as the collected data included interview data rather than numbers and quantities [13]. Findings of the present study can be used by real and juridical persons, including managers, deputies, and senior experts of pharmaceutical manufacturers in Iran to solve existing problems in development, modification, and improvement of their business models.

This was also a descriptive study as it sought to describe the features of different dimensions and components of business models adopted by pharmaceutical companies. The statistical population included all chief executive officers (CEOs), deputies, managers, and senior experts of Iranian human pharmaceutical manufacturers within the research period. These managers were the best ones who had enough information about the elements and components of the pharmaceutical company's business model.

The pharmaceutical products studied in this article are only those competitive generic brands and generic products that are not for the treatment of special diseases, and also are based on the theory of product life cycle (four phases include introduction, growth, maturity, and decline) [14]. The products of this research are only in the growth stage.

Before starting the interviews, the researcher explained these considerations to the managers of each pharmaceutical company to select the eligible product.

Due to the adoption of a qualitative approach, the sample size was not specified in the beginning, and thus the sampling process continued until theoretical saturation was achieved. Therefore, 19 persons of the 8 pharmaceutical companies were interviewed and from the sixth interview, theoretical saturation was obtained. Data collection instrument was semi-structured interviews at the research site. The interview items were derived from an initial framework extracted from literature review. While in a structured interview, there is a certain and limited option for answering questions and the interviewee is not allowed to express new ideas or dimensions of the subject, in a semi-structured interview this freedom of expression exists for individuals to add new ideas and concepts to the items in the answer options [15]. The internal validity of the items was examined using the interpretative validity approach. In this approach, two strategies, namely "participants' feedback" and "using some objective expressions of interviewees in final report," were used. In the first strategy, interpretations and results are given to the participants by the researcher to be corrected, if needed [16]. Moreover, the Scott's pi was used to measure external validity or reliability of the research instrument.

The current study used content analysis to analyze qualitative data. Regarding that the researcher intended to investigate transcribed interviews and focus only on explicit messages in them, qualitative content analysis was employed [17]. Moreover, deductive content analysis was used for response analysis [18].

Therefore, in short, the method used in this study was in three main phases. First, by reviewing the scientific literature, we obtained a basic framework for the dimensions and components of the business model. The method of extracting this framework was to first list all the dimensions and components expressed from the perspective of each researcher, and then, based on their semantic similarity, we combined the same items together to achieve a comprehensive framework.

In the second phase, we developed a semi-structured interview plan with top managers and senior experts of pharmaceutical companies, and changed the framework of the business model to coincide pharmaceutical context. At this stage, data analysis was carried out simultaneously with the interviews, and the final model was obtained by removing unrelated substances from the pharmaceutical industry and adding new ones and combining similar items.

In the third phase, the analysis of the reliability of the model was done, and the validity of the final framework was examined and finally was approved.

3. Findings

To select from business model components proposed in literature, two key principles were highlighted by the author: first, the researcher's general understanding of the concept and nature of the business model and its components; second, frequency of recurrence, reference, and use of these components by the majority of researchers, specifically in recent years.

The majority of the proposed business models either shared common components (e.g. "value proposition") [1,9,19], or conveyed components with common concepts using different statements (e.g. "value network" [20]; "key partnerships" [9,21]). All above definitions referred to corporate partners that contributed to value creation. Therefore, they can be introduced to the initial model as "partnerships".

However, some other proposed elements had different meanings and very low frequency, for example, the following two elements, which were the most important ones with more distinct features: "sustainability" [9,22]; and "knowledge level" [23].

The sustainability in Afuah and Tucci's study has a close meaning to knowledge level of Venkatraman and Henderson's study [9]. This element refers to factors that make imitation problematic for competitors, and allow the company to continue earning revenue in long-run and have sustainable competitive advantage. Regarding that non-financial values received by the business model have not been addressed by different models, which these two scientists have explicitly spotted it, and despite its low frequency, the researcher intended to include it in his proposed business model.

Then, the initial components of the proposed business model were presented in four dimensions, and ten key elements or factors based on classification mechanisms used by Al-Debei and Avison, as well as Osterwalder and Pigneur [21,24]. They first provided a general classification of the business model dimensions and then defined elements of each dimension with respect to that dimension. Therefore, the initial components of the business model proposed in the current study were provided with four dimensions and 10 elements. Table 1 illustrates the dimensions and components of the business model from the perspective of the prominent and contemporary scientists in this area.

The data analysis process was initiated at the same time with the first interview. In the first step, the encoding process of categories and concepts were described. Then, the encoding results, along with their explanation and description were expressed. Encoding procedure was as follows: first, an initial code was assigned to the concepts extracted from literature review. By the end of each interview, every new concept under each category was added to existing codes of that category, using a different color. The codes, which were not agreed on at all, were removed after reaching theoretical saturation. If all concepts under a category were not confirmed by the interviewees, the respective category was removed from the concept framework of the subcategory of that theme. The codes with highly similar concepts were combined or remained separated, based on the comments made by the researcher supervisor and advisors.

Considering the encoding mechanism used in the current study, all concepts were presented in the following table without any change. Then, the frequency of agreement on each code was measured in percent. The new concepts, derived from interviews, were presented in the table with a dark background. Similar concepts, which could be integrated, were presented with * and a common number above them (e.g., "brand*[1]" and "product history and records*[1]"). According to table 2, the frequency and percentage cells of the codes, which were not agreed on to be included in the proposed framework for a category, are blank. Therefore, these codes can be removed. The following table presents only one part of content analysis calculations for the first theme of the business model of pharmaceutical companies.

Table 1. The primary framework of the business model components from literature review

Dimension	Component	Elements (factors)	References
Value propositions	Value content	Newness, performance, customization, diversity, getting the job done, design, brand/status, price, cost reduction, risk reduction, accessibility, convenience/usability	[1,2,19,22,25]
Value receivers and interaction mechanism	Customers	Mass market, niche market, segmented, diversified, multi-sided platforms	[1,2,22,25]
	Channels	Direct or indirect, owned channels or partner; channel content: awareness, evaluation, purchase, delivery, after sales	[1,25,26]
	Customer relationships	Personal assistance, dedicated personal assistance, self-service, automated services, communities, co-creation	[1,25,27]
Value architecture	Key activities	Production, problem solving, platform/network	[1,8,25,27]
	Key resources	Physical, intellectual, human, financial	[1,19,25]
	Key partnerships	Strategic alliances between non-competitors, cooperation, joint ventures to develop new businesses, buyer-supplier relationships	[1,9,19,22,25,26]
	Cost structure	Cost-driven, value-driven	[1,22,25]
Received values	Revenue model (financial received values)	Transaction revenues, recurring revenues	[1,25,26]
	Sustainability model (non-financial received values)	Reputation acquisition among customers, competitive ability	[9,23]

Table 2. Initial encoding of the components of the pharmaceutical company's business model

Theme	Category	Concept	Frequency of agreement	% of agreement	Code
Value propositions	Value content	Newness	////	50.0	BMVX1
		Diversity		0	BMVX2
		Performance	////////	100	BMVX3
		Customization		0	BMVX4
		Design	/////	62.5	BMVX5
		Brand*[1]	//////	75.0	BMVX6
		Price	//////	75.0	BMVX7
		Cost reduction	/////	62.5	BMVX8
		Risk reduction		0	BMVX9
		Accessibility	////////	100	BMVX10
		Convenience/usability	//////	75.0	BMVX11
		Under international brand license	/	12.5	BMVX12
		Product history and records*[1]	////	50.0	BMVX13
		Reduced side effects	//////	75.0	BMVX14

After final analysis of data, the following results were obtained: under the value propositions, the "brand" and "product history and records" were recognized distinctive and thus encoded separately. Under the customer category, a general conclusion was made of all interviews, that all pharmaceutical companies have an initial category for customers of the marketing and customers of the sale segments. In other words, the marketing and sale segments in all pharmaceutical companies have a certain group of customers, which can be categorized into six distinct groups, for each a specific marketing program is considered. These six groups are distribution companies (distributors), pharmacies, physicians and medical associations, pharmacy professors, patients, and the public. Regarding that the sales segment only deals with distributors and pharmacies, through the distributors, it was decided to make this initial and intrinsic distinction in pharmaceutical companies by separating marketing and sales customers from each other and placing them in the sales customers group, and placing physicians and medical associations, pharmacies, pharmacy professors, patients, and the public in the marketing customers group.

Under the "key activities" concept, as it was expected, since the only productive or key activity of pharmaceutical companies was the conversion of raw materials into pharmaceutical products, i.e. "production," there was no other key activity to present. According to the interview results, only the "production" was approved by these companies without adding any new concept to it. Based on observations, since inclusion or exclusion of this item did not make any difference between the business models of different pharmaceutical companies, the researcher decided to exclude "key activities" completely from the business model of pharmaceutical companies.

In general, eight pharmaceutical companies (Exir, Sobhandaru, Abureihan, Osveh, DarouPakhsh, Alborzdarou, Sinagen, and Jabir Ibn-Hayyan) were interviewed. From the 14th interview conducted in the six companies, no new content was identified within the research component framework and no change in previous results was observed. As a result, theoretical saturation was not achieved. However, to assure the validity and reliability of the results, two other companies, were interviewed. From qualitative findings, the final business model was developed from varying business model frameworks with four themes or dimensions, nine categories or major components, and 67 concepts for their identification. Table 3 presents final results from data analysis.

Since the new indices added to the model were not explained in the literature review, detailed explanation of their concept derived from transcribed interviews was presented. In the value propositions, three new concepts were added: first, under license drugs that refer to medicines under license protection of a valid international pharmaceutical company (brand); second, product history and records that indicates the effect of this concept on tendency to intake or prescribe the medicine; and third, the reduced side effects that is undoubtedly a source of value delivery. Regarding the value receivers, the following four new concepts were added to the channel content: first, prestige that refers to imported medicines in the product basket of drug distributors; second, monopoly that refers to the absence of other competitors in the product basket of the distributors; third, being pioneer that refers to an increase in sales rate during previous years; and fourth, superiority that means a given distributor is amongst the best distribution companies according to the datapharma (official sales statistics).

In the revenue model section, three new revenue models were identified. The first model was the cash sales versus credit sales. The cash sales are paid maximally 60-90 days after receiving the products; whereas, the credit sales are paid in a period longer than 90 days, which may take even one year. Another type of the revenue model is lending sales: a trading arrangement in which the drug manufacturer (seller) sends goods to the distributor, which pays the seller only the sold goods, and the unsold ones are returned. In the sale process of revenue model, the distributor is committed to pay the seller whenever a product is sold. At the end of the contract, the distributor should pay even the unsold products. The last index was scientific futurology, which was added to non-financial values received by the company. That was indeed the sustainability model. According to the managers of the pharmaceutical companies, they can identify future needs and opportunities in the production and sales of new medicines through investment on research and development.

Table 3. Final dimensions and components of the pharmaceutical companies' business model

Theme	Category	Concept			
Value propositions	Value content	Newness, performance, design, brand, price, cost reduction, accessibility, convenience/usability, under international brand license, product history and records, reduced side effects			
Value receivers and interaction mechanism	Customers	Physicians and medical associations Pharmacy professors Distributors Pharmacies Patients Public	Segmented market	Niche market	Mass market
	Channels	Owned or partner			
	Channel content	Awareness, evaluation, purchase, delivery, after sales, prestige, monopoly, being pioneer, superiority			
	Customer relationships	Physicians and medical associations Pharmacy professors Distributors Pharmacies Patients Public	Personal assistance	Dedicated personal assistance	
Value architecture	Key resources	Physical, intellectual, human, financial			
	Key partnerships	Strategic alliances between non-competitors, cooperation, joint ventures to develop new businesses, buyer-supplier relationships			
	Cost structure	Cost-driven, value-driven			
	Cost categories	Production, research and development, relationships with contributors, relationships with marketing customers, partnerships, administrative and official			
Received values	Revenue model	Transaction vs recurring revenues, cash vs credit, lending, sale process			
	Sustainability model	Reputation acquisition among customers, competitive ability, scientific futurology			

4. Discussion

The dimensions and components of the business model of pharmaceutical companies have changed dramatically from the past, so that a careful study of these changes will provide insights into the future trends of this industry. According to the JSB intelligence report [28,29], the business models of the past and, of course, somewhat current, of some pharmaceutical companies, featured in many aspects and dimensions that have undergone significant changes today. The results of this study indicate that Iranian pharmaceutical companies have also taken advantage of these changes.

For example, in the past, many pharmaceutical companies in the field of customers or more correctly, their value audiences, were only focused on the three groups including distributors companies, pharmacies, and physicians [29,30]; while according to the results of this study, many Iranian pharmaceutical companies expanded their audience to the pharmacy professors in the universities, various patient groups, and the general public. In this new approach, companies, in addition to providing incentive information and suggestions to the first three groups, also form various workshops to inform and develop the knowledge of other new audience groups.

On the other hand, in the past, the focus of the business models, was on exploiting financial, physical, and human resources to make drugs more effective; and from this perspective, the value propositions of pharmaceutical companies are often focused on the product quality issues and the ease of access to the drug for patients (distribution issues) [28]. But the results of this research showed that today, other key resources such as intellectual sources, like the company's brand or product's brand, are of great importance to pharmaceutical companies, and based on this, wider areas of such values as convenience/usability or ease of use, design, risk reduction, product history and records have been considered by companies.

Further, in the area of key partnerships for value architecture and generation, the past trend among pharmaceutical companies was to maximize the exploitation of internal resources and minimal communications (just purchase) with other external partners [28,29]; while according to the findings of this study, the willingness of pharmaceutical companies has increased towards the strategic relationship with other business partners in the supply chain and outsource many of their activities. This trend reflects the growing movement of pharmaceutical companies towards network structures and strategic communications with other partners.

Significant changes were observed in the received values in the business model of pharmaceutical companies. The research showed that while in the past companies have been most focused on obtaining financial value from drug sales [28,29], today, a significant number of pharmaceutical companies are focusing on topics such as scientific futurology and they are trying to make use of the long-term benefits of the research and development (R&D) process, in the field of

disease, or technological advances in medicine or scientific advances in the field of the economy, and the market for pharmaceuticals also increases their non-financial values.

5. Conclusion

The review of the studies about the business model of pharmaceutical companies shows that there is no comprehensive and specific framework for explaining the dimensions and elements of the pharmaceutical business model.

The key dimensions and components of the business model of a pharmaceutical company were including four dimensions. The first dimension was value proposition, which contained 11 elements. The second dimension was value receivers and interaction mechanism, which included customers, channels, and relationships. The third dimension was value architecture that included three major components; the key resources, partnerships, and cost structure. The fourth dimension was also the received value, which was divided into two categories of financial and non-financial values.

In the area of value proposition, the various factors that were different from drug quality were added to the model. The value receivers segment was first divided into two main groups of marketing and sales audiences, and then marketing audiences were divided into six categories (physicians and medical associations, pharmacy professors, distributors, pharmacies, patients, and public) and sales audiences into two categories (distributors and pharmacies). Moreover, in the section of received values, the category of non-financial values or sustainability model included factors such as reputation acquisition among customers, competitive ability, and scientific futurology, which were added. As a result, new elements could be identified in the business model of pharmaceutical companies that transcend the capability of comparing and classifying pharmaceutical business models from limited factors such as the type of product or production method.

6. Conflict of Interests

Authors have no conflict of interests.

7. Acknowledgments

The authors would like to thank the professors: Dr. Ebrahimi, Dr. Taghavi Fard, Dr. Karimi Alavijeh, Dr. Dehdashti, Dr. Sargolzai, Dr. Rezqi, and many other managers of the pharmaceutical companies who helped in this study.

References

(1) Osterwalder A, Pigneur Y. Business model generation: A handbook for visionaries, game changers, and challengers. Hoboken, NJ: John Wiley & Sons; 2010.
(2) Al-Debei MM, Fitzgerald G. The design and engineering of mobile data services: developing an ontology based on business model thinking [PhD Thesis]; London, UK: Brunel University; 2014. 2018.
(3) Wetherbe JC, Turban E, Leidner DE, McLean ER. Information technology for management: Transforming organizations in the digital economy. Hoboken, NJ: John Wiley & Sons; 2007.
(4) Lambert S. A conceptual framework for business model research [Online]. [cited 2008]; Available from: URL: http://aisel.aisnet.org/bled2008/24
(5) Chesbrough H. Business model innovation: Opportunities and barriers. Long Range Plann 2010; 43(2): 354-63.
(6) Schmid B, Stanoevska-Slabeva K, Tschammer V. Towards the E-society: E-commerce, e-business, and e-government. Berlin, Germany: Springer Science & Business Media; 2001.
(7) Alt R, Zimmermann HD. Preface: Introduction to special section-business models. Electron Mark 2001; 11(1): 3-9.
(8) Stahler P. Business models as a unit of analysis for strategizing. Proceedings of the International Workshop on Business Models; 2002 Oct. 4-5; Lausanne, Switzerland. 2002.
(9) Afuah A, Tucci CL. A model of the internet as creative destroyer. IEEE Trans Eng Manag 2003; 50(4): 395-402.
(10) White S. Pharma 2020: The vision-which path will you take?: Pharmaceutical practitioner. S Afr Pharm J 2007; 74(8): 40-1.
(11) Sabatier V, Mangematin V, Rousselle T. From recipe to dinner: Business model portfolios in the european biopharmaceutical industry. Long Range Plann 2010; 43(2): 431-47.
(12) Ku MS. Recent trends in specialty pharma business model. J Food Drug Anal 2015; 23(4): 595-608.
(13) Danaeifard H, Alvani M, Azar A. Quantitative research methodology in management: A comprehensive approach. Tehran, Iran: Safar Publications; 2004.
(14) Anderson CR, Zeithaml CP. Stage of the product life cycle, business strategy, and business performance. Acad Manage J 1984; 27(1): 5-24.
(15) Cohen D, Crabtree B. Qualitative research guidelines project [Online]. [cited 2006]; Available from: URL: http://www.qualres.org/HomeEval-3664.html
(16) Johnson RB. Examining the validity structure of qualitative research. Education 1997; 118(2): 282-92.
(17) Stemler S. An overview of content analysis. Practical Assessment, Research & Evaluation 2001; 7(17): 1-6.
(18) Krippendorff K. Content analysis: An introduction to its methodology. Thousand Oaks, CA: SAGE; 2004.
(19) Hedman J, Kalling T. The business model concept: Theoretical underpinnings and empirical illustrations. Eur J Inf Syst 2003; 12(1): 49-59.
(20) Hamel G. Leading the revolution. Brighton, MA: Harvard Business School Press; 2000.
(21) Osterwalder A, Pigneur Y, Tucci CL. Clarifying Business models: Origins, present, and future of the concept. Communications of the Association for Information Systems 2005; 16: 1-25.
(22) Chesbrough H, Rosenbloom RS. The role of the business model in capturing value from innovation: Evidence from Xerox Corporation's technology spin-off companies. Industrial and Corporate Change 2002; 11(3): 529-55.
(23) Venkatraman N, Henderson JC. Real strategies for virtual organizing. Sloan Manage Rev 1998; 40(1): 33-48.
(24) Al-Debei MM, Avison D. Developing a unified framework of the business model concept. Eur J Inf Syst 2010; 19(3): 359-76.
(25) Osterwalder A. The business model ontology a proposition in a design science approach [PhD Thesis]. Lausanne, Switzerland: University of Lausanne; 2004.
(26) Gordijn J, Akkermans H, Van Vliet H. Business modelling is not process modelling. Proceedings of the 19th International Conference on Conceptual Modeling; 2000 Oct. 9-12; Salt Lake City, Utah.

(27) Petrovic O, Kittl C, Teksten RD. Developing Business Models for eBusiness [Online]. [cited 2001]; Available from: URL: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.24.9466&rep=rep1&type=pdf
(28) JSB Intelligence. Strategic analysis of the pharma market, future revenue models and key players [Online]. [cited 2005]; Available from: URL: http://www.fgcasal.org/politicafarmaceutica/docs/JSB_Intelligence_resumen.PDF
(29) Capo F, Brunetta F, Boccardelli P. Innovative business models in the pharmaceutical industry: A case on exploiting value networks to stay competitive. Int J Eng Bus Manag 2014; 6: 1-11.
(30) Nasseri K. Selection of a suitable business model in the pharmacy company elixir (Public Joint Stock Company) [MSc Thesis]; Tehran, Iran: School of Management and Accounting, Allameh Tabataba'i University; 2018. [In Persian].