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Impact of organizational inertia on business model innovation, open innovation and corporate performance

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ABSTRACT

Business model design becomes an essential source of firm innovation in the current competitive world. Business model innovation refers to the creation or reinvention of existing business models by designing novel value-creation systems, proposing new value propositions, and building original value-capturing mechanisms. However, to adopt the innovative business model in any organization, the inertia to change is a substantial barrier, and its role has not been examined completely. The purpose of this study is to examine the impact of organizational inertia on open innovation, business model innovation, and corporate performance. Using the survey as the research model, data were collected from 160 companies operating in the information technology industry in the city of Tehran. These firms were selected via judgment sampling method. The hypotheses were tested using structural equation modeling technique via SmartPLS2 software. Based on the findings, organizational inertia has a negative relationship with business model innovation and open innovation; though, business model innovation and open innovation have a positive effect on the performance.

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1. Introduction

Nowadays, not only innovation is not a process in businesses, but also it is a set of new components containing the permanent setting requirements, production process requirements, industrial and market changes, and a combination of the cognitive population (Tootifar Tehranpour & Zia, 2014). Recent surveys demonstrate that the importance of business model innovation is undergoing an increasing trend, and the chief managers of the global corporations predict that its necessity will even surpass the importance of innovation in products and services. Business model innovation is a new criterion based on which the pioneer companies try to create and deliver more value for their customers. In this way, they tend to increase their takeover value. In fact, innovative business models propose a better approach for presenting more value to a specific

category of costumers while returning more benefits to the company (Khodami & Asanloo, 2016). Sometimes innovation and creating value for the customer means accepting the new system. Considering that adoption of a new system usually implies fully or partly replacing a current system, resistance is often manifested as failure of a user to shift from a current technology to a newly introduced one. Therefore, a potential source of resistance to adopting a new system lies in the use of a current system (Polites & Karahanna, 2012). Considering that the adoption of information technology systems often implies considerable organizational transformation, organizations frequently respond static and rigid resulting in the failure to shift to new technology (Haag, 2014). When organizations attempt to change, varied organizational structures and inertia behavior for systems and strategies appear, because of the experience that previous models created, or because organizations were bound by fixed operating procedures (Huang et al., 2013). Nevertheless, resistant inertia against change is inevitable in most organizations.

There are various researches about inertia, each viewing it from a different aspect. Tsai et al. (2008) considered the organizational inertia to be the most important factor which prevents the

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recognition of setting threats for the organization and results in low speed of adaptability to the new settings. Organizational inertia is a barrier on the way of both organizational change and organizational affectivity in the developing countries. [Godkin and Allcorn \(2008\)](#) believe that organizational inertia is the most critical factor for resistance against change. [Haag \(2014\)](#) noted that organizational inertia is known to be an obstacle for accepting information and communication technology (ICT). Furthermore, the researchers have shown that the inertia prevents innovation in an organization and makes it hard for the organization to accept change in the business model.

In the small and medium-sized enterprises, decision making is up to the owner. However, while deciding on organizational strategies, the owner's actions are based on the previous strategic practices, especially those that were successful. In case the inertia power is strongly persisting on conservation of the current state of the company, the organizational changes towards opportunities or against threats are slower, increasing the response delay to the outer settings ([Huang et al., 2013](#)). [Singh and Lumsden \(1990\)](#) believed that organizational inertia has a considerable effect on organizational performance. Today, companies try to deploy open innovation for internal innovative business actions and management activities. This means that the organizational inertia is decreased, and setting adaptability is achieved through open innovation, which plays a vital role here. In addition to that, in comparison with more giant corporations, small and medium-sized enterprises lack sufficient resources. Companies with abundant resources can perform their innovative internal actions by relying on their strong technical and economic capabilities. On the other hand, small and medium-sized enterprises, despite their lack of resources, require attracting external assistance, e.g., outer technologies, skills, professional knowledge while performing innovative activities.

Companies active in Information and Communication Technology (ICT) sector were selected as the population of this study due to its importance in the country's technological and scientific development, commercialization of ideas and knowledge through providing new products and services, and also due to the fact that these companies are accompanied by rapid changes and high tech, and they are negatively affected by organizational inertia. In spite of the studies performed in the country, few research has been done on organizational inertia and innovation so far ([Jafari et al., 2019](#)). Therefore, this research puts its focus on organizational inertia and its effect on innovative activities (for example, open innovation and business model innovation). Also, it investigates the effect of innovative activities on the performance of ICT companies. This research is aimed at recognizing different types of organizational inertia and its effect on the business model and open innovation, investigating the role of this issue regarding its effects of business model innovation, and evaluating the final result in organizational performance.

2. Research background

2.1. Organizational inertia

"Inertia" comes from the Latin word, *iners*, meaning idle and sluggish. Newton defines inertia as the following: "everything which remains in the stagnant situation or a constant movement unless an external force activates it". The concept of organizational inertia was introduced by [Singh and Lumsden \(1990\)](#) by using organizational ecology theory for explaining the complex system between the organization and its surrounding environment and the phenomena which is not easily changed in the face of environmental changes. Sociologists have used the definition of inertia in

physics as a "metaphor" for describing the problem in changing the organizational structure. [Starbuck et al. \(1978\)](#) believed that organizational inertia is a phenomenon of stagnant organization, and it reflects the excessively stable condition of products, production methods, and policies of an organization ([Huang et al., 2013](#)). Organizational inertia is the organization's ability to make internal changes in the face of significant external changes. When inertia gradually occurs in the organization's actions, the organization automatically reacts based on past experiences and strongly resists against changing. Some researchers believe that when rules and habits limit organizational actions, they become stable and static ([Edmondson et al., 2001](#); [Nelson & Winter 1982](#)). Restriction of organizational actions by behavioral rules and habits repeats in the organization. It becomes a feature of daily activities in the organization, which leads to inflexibility and resistance of businesses against changes ([Carley & Harrald, 1997](#)). [Gilbert \(2005\)](#) has specified two types of organizational inertia; resource inflexibility which suggests the company's failure to change the patterns of investing the resources, and routine inflexibility which implies no change in organizational processes and the procedures of using the invested resources ([Gilbert, 2005](#)). Organizational inertia and organizational flexibility are two contradictory terms in organizational literature. Flexibility has a favorable implication, and an organization with higher flexibility is more efficient than others. Inertia appears in organizations in different forms, including suppression of valuable information in the organization, inflexible rules, excessive commitment to the organization, etc. ([Boyer & Robert, 2006](#)). Organizations are open systems that are communicated with their surrounding environment, and it is the guarantor of organizations' survival. If the organization disconnects communication and information channels around it, it does not become aware of the surrounding transformations, and it leads to the destruction of the organization. Inflexibility does not allow the organization and its individuals to adapt to environmental changes. So, it leads to individual stagnancy and, consequently, inertia in the whole organization. [Godkin and Allcorn \(2008\)](#) considered the aspects of organizational inertia as insight inertia, action inertia, and psychological inertia. According to [Godkin and Allcorn \(2008\)](#), insight inertia is related to mental models and action theories; action inertia has been studied from the aspects of management assumptions and pre-assumption control; and psychological inertia has been studied from the aspects of stress and anxiety and defensive mechanisms of response to change. Generally, it includes numerous interwoven factors like organizational strategies, systems, procedures, leadership styles and management models of leaders, team spirit, and strain capacity ([Amiripour et al., 2017](#)). Moreover, each factor implies its value and concept. These concepts may conflict, contradict, and influence each other. Therefore, in the entire operation of the organization, concepts are continuously filtered and integrated to reach consensus and finally become the entire organization's value system ([Shi and Zhang, 2018](#)). In the face of ever-changing and volatile situations and circumstances, if an organization maintains the status quo for an extended period of time and fails to respond in a timely manner, we can say that it has inertia.

Different types of organizational inertia that have been studied in this research include insight inertia, psychological inertia, action inertia, structural inertia, and economic inertia, which are described in the following.

2.2. Insight inertia

Insight inertia is a lack of understanding of the organization's environmental changes. In other words, management may have no appropriate insight and interpretation of the signs of the internal

and external environment for determining and adapting the organization's behaviors in order to encounter with the external environment or internal demands for change (Hedberg & Ericson, 1997). Keiser, Beck, and Taino defined this problem as the following: Members of the organization do not have a proper understanding of the environment, and they cannot understand the cause of the changes. Insight inertia is an interruption in the cycle of organizational learning (Huang et al., 2013).

2.3. Psychological inertia

Members of the organization usually resist changes regardless of the extent of their necessity. Organization members' resistance against change usually leads to psychological inertia. From the employees' viewpoint, changes implicitly imply many facts, long term relationships may be lost, they may be required to learn new skills, or the nature and expectations from the jobs may be changed. People's resistance is not necessarily resistance against the change itself; instead, it is resistance against losing valuable things during the process of change. "Change" is something difficult and threatening, and so, people are willing to remain in their past situation. Usually, people who try to defend their independence resist against those who have the authority to control their actions (Godkin & Allcorn, 2008).

2.4. Action inertia

The other aspect of organizational inertia is action inertia, which occurs when the management's response to environmental activities is prolonged or when the information collected for doing a conscious action for the organization is inadequate. In contrast to insight inertia, it should be said that action inertia occurs after the analysis of the environment and environmental survey (Hedberg & Ericson, 1997). Based on the studies conducted by March & Olsen (1975), Godkin and Allcorn (2008) mentioned different factors as the main factors of action inertia such as limited role learning which suggests that people have learned the knowledge required for performing the work, but they cannot act based on the new acquired knowledge. In fact, their job is accompanied by this limitation. Also, audience learning occurs when people change their behavior in response to the learned knowledge, but they cannot persuade others to change their behavior. Fictitious learning occurs when people do not have a proper understanding of the effect of organizational actions on the environment (Huang et al., 2013).

2.5. Structural inertia and economic inertia

In another research, Haag (2014) proposed other aspects for organizational inertia, including structural inertia and economic inertia. According to Hug, structural inertia is related to the organization's structure and processes. This type of inertia occurs when the organization cannot change its processes. Economic inertia is related to saving the costs and costs spent by the organization in changing the processes for new approaches. Usually, organizations resist new systems or new solutions regarding the economy (Haag, 2014). In this research, by using the opinions of Godkin and Allcorn (2008) and Haag (2014), five dimensions have been considered for organizational inertia.

2.6. Inertia and other barriers to change

There are different types of barriers to change in organizations such as organizational imprinting, path dependence, commitment and sunk cost, institutional persistence, and organizational inertia.

The notion of imprinting begins with the insight that

organizations established at one time commonly have a various social structure from those formed at another time. Indeed, the founding team select and incorporate historically specific elements at the time of founding. Organizational imprinting assumes that the initial conditions (at the time of founding an organization) are most important in explaining the subsequent organizational structure and behavior. These elements may become routine and, as a result, affect the structure and behavior of the organization long after the establishment phase (Schreyögg & Sydow, 2011).

Path dependence is used often as a broad label indicating all kinds of imprinting effects of the past on organizational behavior (Sydow et al., 2020). The starting point of any advanced path dependence opinion is the importance of previous events for future action or, in a more focused way, of foregoing decisions for present and future decision making (Sydow et al., 2009).

Commitment and sunk cost is another obstacle to change. Escalation of commitment occurs as a consequence of decision-makers trying to justify their previous actions and is seen when individuals or organizations invest more resources into a failing course of action after a sequence of negative outcomes (Coleman, 2010). This concept basically focuses on the binding forces of earlier spent costs or energy on later decisions at the organizational or individual level. Managers persist with their business model or strategy because they are afraid to lose the initial investment. Besides fear of losing money, further reasons have been developed to clarify this tendency. Among them, there is emotional boundedness to an investment or a strategy; also, decision-makers may be reluctant to admit that their prior choice is probably to fail (Schreyögg & Sydow, 2011).

Institutional persistence is a possible, perhaps even likely consequence of institutionalization processes. This process is at the core of neo-institutionalism in organization theory. This is particularly the case when the institutionalization process directs not only to the diffusion of a certain practice within an organization or an organizational field, but to the legitimation and sedimentation, even taken-for-grantedness and 'objectification' of this practice (Schreyögg & Sydow, 2011).

Inertia occurs via the intended establishment of reliable organizational structures when there are no structural dynamics. Structural inertia is the hyper stability of organizational arrangements in spite of environmental change. It is a universal organizational feature that develops in the course of structuring the organization. Institutionalizing and routinizing organizational activities are seen as essential in order to guarantee stakeholders account ability, reliability and, eventually, survival in competitive environments. Inertia is considered a precondition for effectual organizational acting but, paradoxically enough, finally threatens the organization's survival, because it is to bring about an incompatibility with changing environmental conditions (Sydow et al., 2009).

The differences between change barriers concepts are illustrated in Table 1.

2.7. Open innovation

Innovation is not only the main factor to the survival of businesses in the market, but also the central driving force of business' sustainable development (Yang et al., 2020). Innovation is generally defined as a repetitive process for combining a set of unique abilities (Bachari et al., 2014). Effective organizational innovation is the key to make and keep a competitive advantage to encounter environmental changes and developments (Sutanto, 2017). The concept of open innovation suggests that companies and businesses should be more flexible and open to innovation processes. It can lead to not the only attraction of more talents, but also to

Table 1
Differences between change barriers (Schreyögg & Sydow, 2011).

	Inertia	Path dependence	Organizational imprinting	Commitment and sunk cost	Institutional persistence
Preliminary conditions	Does not matter, formation through the process	Important starting point, but indeterminate impact	Conclusive starting point	Decision	Does not matter, formation through external forces
Outcome of process	Resistance efficient and then inefficient	Path dependence, at least potential inefficiency	Resistance	Resistance & inefficiency	Resistance
Predictability	Given after establishing a favored pattern	It is not clear at first, it becomes clear in the stage of path formation	It is clear from the beginning	It is clear from the beginning	Given when knowing the environmental forces
Level of analysis	Organizations, sometimes population	Organization and other levels	Organization	Organizations, sometimes population	Organizations, sometimes field

transfer of innovative ideas and development and research technologies to other companies. Open innovation is a concept that was first introduced by Chesbrough (2003).

Chesbrough (2003) defines open innovation as “purposeful use of internal and external knowledge flows for increasing the speed of internal innovation and developing the market for external use of innovation.” This concept suggests that companies and businesses should be more open to innovative processes. It can lead to the not only attraction of more talents but also a transfer of innovative ideas and development and research technologies to other companies. Companies use the concept of open innovation for innovative internal ideas that can flow out and also external ideas and technologies which can flow inside a company. It allows the effective use of potential internal ideas by external companies. Open innovation means that valuable ideas can originate from inside or outside of the company, and commercialization of them can be done inside or outside of the company. Companies accept interests and risks by opening the fences locating between the organizational knowledge and the outside (Chesbrough, 2003). According to Enkel et al. (2009), using open innovation in the commercialization process of companies has many advantages. For example, according to some studies, using open innovation can increase product success rate by 50% and research efficiency and internal development by 60%.

In contrast to the common assumption of considering open innovation as an one-sided flow in which innovative ideas flow from outside of the organization to inside, this concept also includes the flow of knowledge from inside to outside the organization. Full open innovation occurs when these two flows occur in a simultaneous manner (Safdari et al., 2014).

2.8. Business model innovation

Business model innovation includes discovering and adapting different forms of value proposition, valuation, and value creation for the existing business, which is so vital for companies because it affects their competitive situation and their survival chance (Hamelink & Opdenakker, 2019). Innovation in the business model means searching for new methods of a company for creating value and finding ways of earning income and transferring value to the customers, suppliers, and partners (Davari & Rezazadeh, 2014). Business model innovation has been defined as a kind of organizational change and it implies conceptualization and using new methods in economic exchanges (Zott & Amit, 2007). Rapid advances of technologies have enabled companies to change their business methods. Therefore, designing a business model is an essential resource for the innovation of companies. Business model innovation is creating or reconstruction of the existing business models by proposing new value propositions, designing new value creation systems, and building primary value acquisition

mechanisms (Huang et al., 2013). According to Johnson et al. (2008), business model innovation includes four parts: 1) changing the customer value proposition, 2) redesigning the profit formula, 3) revising the vital resources, and 4) regulating the key processes.

2.9. Company's performance

Performance is defined as an organization's ability to achieve the determined goals for preserving profit, having a competitive advantage, increasing market share, and preserving long term survival, which depends on using appropriate organizational strategies and practical plans (Oyemomi et al., 2019). Performance should be defined as the results of work because the results have the strongest relationship with the organizations' strategic goals, customer satisfaction, and economic roles. Organizational performance is a general structure that is related to the way of performing organizational operations. In general, organizational performance refers to the way of doing missions, tasks, and organizational activities and the results of them (Mahmoodzadeh & Sedaghat, 2013).

3. Hypotheses development

3.1. Organizational inertia and open innovation

Mur et al. believed that during the introduction of innovation in the company by business managers, old processes should be simultaneously eliminated so that innovation can flow freely. If the company accepts open innovation, it faces significant cultural and organizational changes, and the past inertia should be eliminated. In a research titled “overcoming organizational inertia for strengthening business model innovation and open innovation perspective”, Huang et al. (2013) studied small and medium-sized companies in Taiwan. One of the results of this research suggested the negative effect of organizational inertia on open innovation in the organization (Huang et al., 2013). So, the first hypothesis can be proposed as the following:

First hypothesis: organizational inertia has a negative effect on open innovation.

3.2. Organizational inertia and business model innovation

Even for very successful companies, inertia leads to facing the problem of adapting to new business methods. Chesbrough & Schwartz (2007) showed that business model management is accompanied by risks and uncertainties, and inertia in organizations with successful business models in the past leads to the problem of the business model in accepting any change (Chesbrough, 2003). The reconfiguration of business models is associated with many problems which require to be overcome,

such as: (1) overcoming inertia, (2) identifying change demands and (3) embracing new structures and choosing sufficient approaches to renovation. Given organizational inertia and outcome indeterminacy, firms are improbable to change their business model unless they have relatively considerable incentives to do so. Even in cases where the demand for adaptation seems evident, the firm's strategic direction and the associated path dependencies are probably to impede the process of adapting an existing business model to new market demands or competitive threats (Vorbach et al., 2017). Also, Huang et al. (2013) showed that organizational inertia has a significant negative effect on business model innovation (Huang et al., 2013). So, the second hypothesis can be proposed as the following:

Second hypothesis: organizational inertia has a negative effect on business model innovation.

3.3. Open innovation and business model innovation

One of the main features of open innovation is that it allows the ideas and knowledge in the innovation process to be purposefully created all over the organizational borders along with the organization's business model (Oltra et al., 2018). Chesbrough believed that companies should expand their business model and use the concept of open innovation. In this method, the company can more effectively upgrade its intellectual property for creating and gaining value. Business model innovation stimulates the company's innovation for searching for new internal and external ideas. Huang et al. (2013) showed that open innovation has a significant effect on business model innovation (Huang et al., 2013). So, the third hypothesis can be proposed as the following:

Third hypothesis: open innovation has a positive effect on business model innovation.

3.4. Open innovation and company's performance

Studies accent the importance of innovation capacity in achieving organizational competitive advantages and performance (Huang & Huang, 2020). In the current era, companies' successful performance before the competitors is related to their innovation. Laursen and Salter (2006) believed that a company that is open to external resources of innovation has a higher innovative performance. Many studies have shown that by the commercialization of knowledge and technology, not only more strategic opportunities are provided for the companies, but also it has a positive effect on the company's performance (Lichtenthaler, 2009, Lichtenthaler & Ernst, 2007). Huang et al. (2013) showed that open innovation has a significant effect on the company's performance (Huang et al., 2013). So, the fourth hypothesis can be proposed as the following:

Fourth hypothesis: Open innovation has a significant effect on the company's performance.

3.5. Business model innovation and the company's performance

Significant evidence shows that innovation is a method that causes the company's survival and welfare in the long term (Damanpour et al., 2009). Organizational innovation performance is one of the factors which affect the organization. A more innovative and creative organization has a better and more competitive performance. Using business model innovation leads to better organizational performance (Hamelink & Opdenakker, 2019). Business model innovation can help organizations for creating a competitive advantage. Developing unique abilities resulted from business model innovation is one of the important resources of competitive advantage. Business model innovation can create new business models and lead to more effectively finding customer

needs, improvement of the quality of products and their properties, and decreasing the costs of production. Pohle and Chapman (2006) believed that by business model innovation, companies could achieve the optimal advantages of cost reduction and strategic flexibility (Pohle & Chapman, 2006). The research performed by Pohle and Chapman showed that business model innovation has a positive effect on the company's performance (Huang et al., 2013). So the fifth hypothesis can be proposed as the following:

Fifth hypothesis: business model innovation has a significant effect on the company's performance.

According to the proposed hypotheses, the conceptual framework of the research is as Fig. 1.

3.6. Research method

In terms of purpose, this research is an applied one and in terms of data collection, it is a descriptive-survey. In this research, an electronic questionnaire was used for data collection. In order to confirm the validity of the questionnaire, opinions of 15 experts and professors were collected for modifying the literature of the questionnaire and fitting that for the majority of participants. In addition, convergent validity resulted from the software approved the high validity of the tool. In order to check the reliability of the research tool, Cronbach's alpha and combined reliability were investigated, and both of them approved the high-level utility of the tool (Table 2). In this research, the analysis unit is organization, and the research population includes ICT companies of Tehran, which are 1900 companies according to the information of ICT Guild Organization. About 1000 questionnaires were electronically distributed among the population in two phases. In the first phase, 73 companies, and in the second phase, 87 companies answered the questions, and totally, 160 questionnaires were collected. In multivariable regression analysis, the ration of the number of samples to the number of independent variables should not be less than 5; otherwise, the results of the regression equation will not be so generalizable. The more conservative ratio of 10 observations for each variable is suggested. According to James Stephens's viewpoint, even considering 15 observations for each predictive variable in multivariable regression analysis by standard least-squares method is an appropriate rule of thumb. Accordingly, in this research, the sample size was calculated based on the following formula:

$$5q \leq n \leq 15q$$

$$5*32 \leq n \leq 15*32$$

In this formula, q is the number of the observed variables or the number of items (questions) of the questionnaire, and n is the sample size. Since the questionnaire of the present research includes 32 questions, the appropriate sample size was considered as 160, at least. Since the collected sample (160) was equal to the minimum number required for analysis based on the above formula (160), this sample size was used for analysis phases.

3.7. Data analysis

About 86% of the sample included men, and 14% included women. Regarding their education, 14% had a Ph.D. degree, 53% had MA degree, 27% had BA degree, and 6% had an associate degree. Regarding the company size, 79% had less than 30 employees, 11% had 30-50 employees, and 10% had 50-100 employees.

For testing the research hypotheses, structural equations model with partial least squares approach was used by SmartPLS2 software. First, the factor loading of all the components was measured

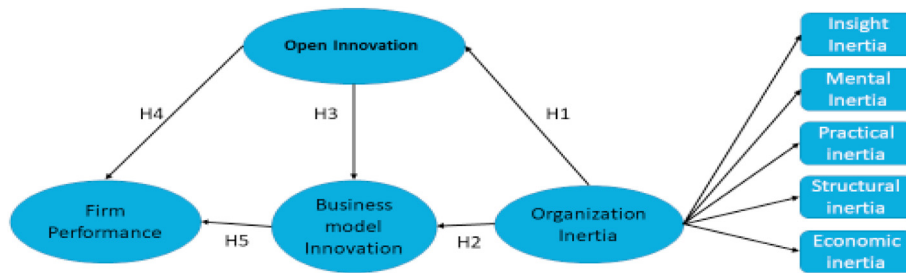


Fig. 1. Conceptual framework of the research (Hamelink & Opendakker, 2019; Huang et al., 2013; Haag, 2014).

Table 2
Resources of questions and validity of the questionnaire.

Variables	Number of questions	Cronbach's alpha	Combined reliability	Convergent Validity	Source of questions
Insight Inertia	4	0.95	0.96	0.56	Godkin and Allcorn (2008)
Practical inertia	5				Godkin and Allcorn (2008)
Psychological inertia	4				Godkin and Allcorn (2008)
Economic inertia	3				Haag (2014)
Structural inertia	2				Haag (2014)
Innovative openness	5	0.94	0.96	0.82	Huang et al. (2013)
Business Model Innovation	4	0.91	0.94	0.78	Huang et al. (2013)
company's performance	5	0.85	0.89	0.63	Huang et al. (2013)

for being used in evaluating the fitness of the model. According to studies, the coefficient of factor loadings of all the factors was more than the minimum acceptable value (0.4) (Fig. 2). In the second phase, the relationship between the variables and research hypotheses was investigated based on T-value criteria, and the results are presented in Table 3 at the level of 95%. For determining the effect of exogenous variables on endogenous variables, path coefficients were reviewed, and they show the extent to which dependent variables are explained by the independent variables addressed in the model (Fig. 3).

After approving the fitness of the measurement model, we should check the reliability of the structural model, and two indicators of R² and Q² are used for this purpose (Table 4).

The three values of 0.19, 0.33, and 0.67 for the coefficient of determination and the three values of 0.02, 0.15, and 0.35 for measurement criteria, have been proposed as weak, medium, and strong value. The obtained values suggest the acceptability of

fitness of the structural model.

At the end, the total fitness of the model is presented, and in the models which are based on partial least squares, GOF index is used which should be more than 0.3. This index was calculated as the following for the research model and the result suggests the suitability of the general model. $GOF = \sqrt{communalities * R^2} = 0.590$

4. Discussion and conclusion

This research was done aimed at explaining the effect of organizational inertia on innovative activities and the effect of innovative activities on organizational performance, and five hypotheses were studied. The results approve the negative effect of organizational inertia on open innovation and business model innovation, the positive effect of open innovation on business model innovation, positive effect of open innovation on company's performance, and positive effect of business model innovation on company's

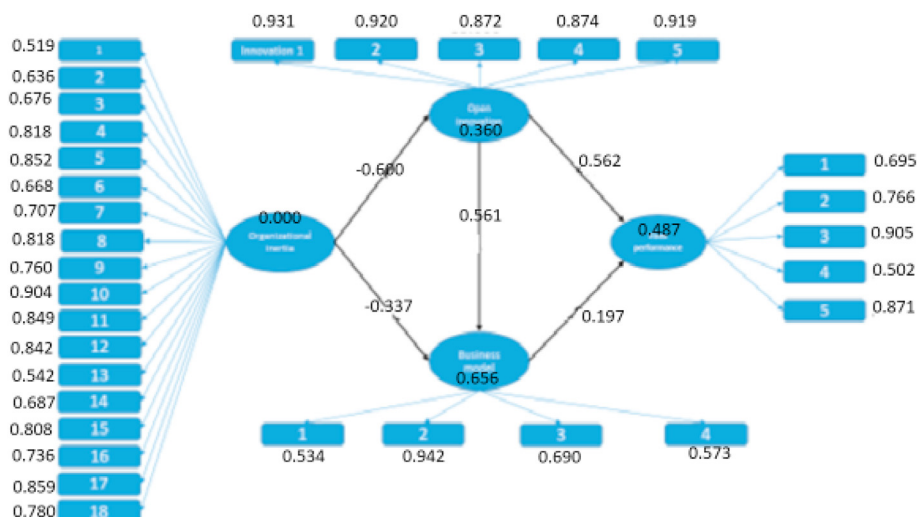


Fig. 2. Path coefficients and factor loadings.

Table 3
The result of testing the hypotheses.

Hypothesis	Path coefficients	T value	Test result
H1:Organizational inertia has a negative effect on open innovation	0.60-	9.81	Ok
H2:Organizational inertia has a negative effect on business model innovation	0.34-	3.23	Ok
H3:Open innovation has a positive effect on business model innovation	0.56	5.55	Ok
H4: Open innovation has a significant effect on company's performance.	0.56	8.48	Ok
H5:Business model innovation has a significant effect on company's performance	0.17	1.99	Ok

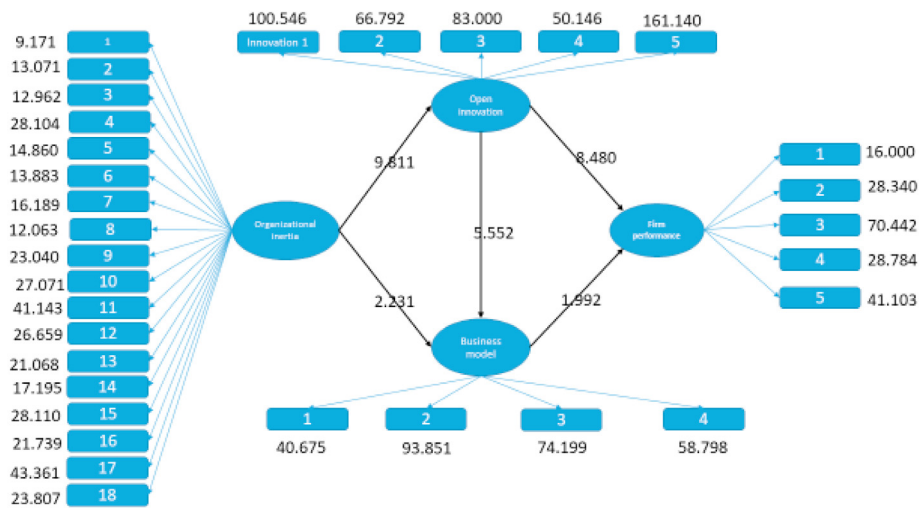


Figure 3. Structural model of the research.

Table 4
Coefficient of determination and measurement criteria coefficient.

Variable	Q ² < 0.15	R ² < 0.19
Innovative openness	0.29	0.360
Business Model Innovation	0.50	0.656
Company's performance	0.31	0.487

performance, and finally negative effect of organizational inertia on company's performance has been rejected. The results showed that the first hypothesis is approved, i.e., organizational inertia has a negative effect on open innovation. It means that if the external environment and the changes of the internal environment are not paid attention in a company and in the case of paying attention if the organization cannot apply internal changes, then the organization cannot use the knowledge and new methods introduced outside that. Also, it cannot use the ideas outside the organization for its development. As mentioned in the literature review section, the results of other researches also approve this fact. If the company accepts open innovation, it faces significant cultural and organizational changes, and the past inertia should be eliminated. The results of the research performed by Huang et al. (2013) have also approved this effect. Also, the results approve the second hypothesis which suggests that organizational inertia has a negative effect on business model innovation. It means that if organizational inertia exists in an organization and the changes required in the organization are not applied, the organization will face problems in its economic exchanges and using new methods. The results of the previous researches have also approved this fact. Huang et al. (2013) indicated that organizational inertia has a significant negative effect on business model innovation. The other result approves the third hypothesis, which suggests that open innovation has a positive effect on business model innovation. It means that when

the flow of knowledge and new ideas from outside the organization to the inside and from the inside to the outside of the organization is free, the studied companies can easily use the modern methods of economic exchanges and develop themselves. The results of previous studies also approve this proposed hypothesis. Huang et al. (2013) indicated that open innovation has a significant positive effect on business model innovation. One of the results of the research performed by Barjooei Nojarad and Hosseini has shown the positive effect of open innovation on business model innovation. Also, the results suggest the positive effect of open innovation on company's performance and it means that when the organization has an open and two-sided communication with its surrounding environment, and the flow of knowledge, information, and innovative ideas between the organization and the environment is free, it will lead to improvement of methods and using useful ideas, and consequently, decreased costs of operations or their acceleration; as a result, the company's performance will be improved. In their research, Barjooei Nojarad and Hosseini concluded that open innovation has a positive and significant effect on business model innovation, and it affects the performance of companies located in Science and Technology Park of Booshehr city. Huang et al. (2013) indicated that open innovation has a positive and significant effect on the company's performance. The results of the research approve the positive effect of business model innovation on the company's performance in the studied companies. It means that in the studied companies, by using business model innovation and changing the way of economic exchanges including 1) changing the customer value proposition, 2) redesigning the profit formula, 3) revising the key resources, and 4) regulating the key processes, company's performance will be improved. The reason for this approval is that paying attention to creating value for the customer and revising and modifying the processes lead to providing better services, customer satisfaction, and increased

profitability.

4.1. Practical suggestions

Regarding the obtained results, the following suggestions are proposed:

- Creating a system for getting the customers' opinions and suggestions for providing services with a higher quality proportional to their needs.
- Encouraging group problem solving for stimulating individuals' innovation.
- Applying the employees' appropriate ideas, which encourage other employees for participation in innovation
- Creating ICT infrastructures for getting and using updated knowledge of organizational processes reengineering
- Determining innovative income flows, the value for which our customers will spend money, what do they spend money for currently? How do they prefer to spend money? How does each income flow affect the total income of the company?
- Strengthening the relationship with internal and foreign industries for getting information on effective business innovation models.
- Studying the actions of countries pioneering in business model innovation for gaining their experiences
- Allocating appropriate budget and equipment to research and development unit for the environmental survey and as a result, changing the work processes
- Avoiding commitment to a special pattern and tending to the flexibility of the company's structure in order to use new procedures for working and providing service which leads to higher efficiency
- Continuous education of managers and employees in the field of designing and updating business models
- Specifying and classifying the customers so that the organization is aware of those for whom it wants to create value.
- Continuously revising and checking the channels of communicating with the customers to determine the way of integration of the channels, to determine which one has a better function, and which one is more efficient.

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