The role of business process improvement in the relationship between the technical benefits of enterprise architecture and organizational performance

Majid Khaleghi Rad
MA in Business Management, Payame Noor University, Garmsar Center, Iran.
m.khaleghirad@gmail.com

Hamid Reza Vaziri Gohar
Assistant Professor and Faculty Member, Department of Management, Payame Noor University, Tehran, Iran.
Hr.vazirigohar@gmail.com

Abstract
the present study investigates the effect of technical benefits of enterprise architecture on organizational performance according to the mediating role of organizational business process improvement on organizational performance. The theoretical framework of the research suggests a link from the effective use of Enterprise Architecture to organizational success. The research method is applied objectively and it is descriptive-correlation in terms of data collection method. The statistical population includes all managers and employees of the National Oil Company. The sample size with the Cochran's formula was estimated 356 people. Questionnaires were distributed and collected among experts and managers by non-random sampling method. The validity of the questionnaire before distribution was calculated and confirmed using the views of experts and its reliability was calculated and confirmed by Cronbach's alpha coefficient. In order to analyze the research data, descriptive and inferential statistics were used with correlation test and structural equation modeling using SPSS and LISREL software. The results showed that the technical benefits of enterprise architecture have a positive effect on organizational performance. The technical benefits of enterprise architecture have a positive effect on business process improvement. Business process improvement has a positive effect on organizational performance. The technical benefits of enterprise architecture have a positive effect on organizational performance with the mediating role of business process improvement.
Keywords: Technical benefits of enterprise architecture, organizational performance, business processes.

Introduction

Today, enterprise architecture is one of the most important and widely used organizational solutions for strategic alignment of information technology with the organization's business and a powerful tool for organizing and equipping complex information systems (Vahdat and Nazemi, 2017). Enterprise architecture tries to advance the organization to a side to be able to use information technology as a competitive advantage by aligning business processes and information technology, as well as the integration of its information systems; therefore, while solving the problems, it creates other added values (Ahmadi, 2017). Enterprise architecture is the explicit documentation and description of the current and considered relationships

between "business", "process management" and "information technology" (Kaisler, 2006). Enterprise architecture, by describing and documenting the internal resources and components and information systems of the organization in the form of technical maps, diagrams, matrices and with a universal perspective and beyond the issue of architecture of information systems investigates the challenges facing the organization and solves the problem by examining the relationship between them (Ahmadi, 2017).

The use of information technology in "agility" helps to improve business operations (Musa Khani et al., 2017) and the high level of IT readiness enhances organizational performance (Kuo, 2013) ;(Davoodnia et al., 2016). IT is a suitable basis for enterprise architecture and in the business environment, the success of the organization depends on the orientation of all parts of the organization, in line with its strategic direction (Khayyam Shahraki et al., 2017). According to the direct relationship between organizational architecture and organizational information technology as well as business processes (Dietz & Hoogervorst, 2008) ;(ibide), so it can be said that improving enterprise architecture leads to improving information technology and business processes (Mirsalari, 2016). Enterprise architecture is an approach that can guide the organizations in achieving the above goal and organizing their business effectively and efficiently (Tavana & Zandi, 2012).

According to the importance of the subject, the present article examines the impact of technical benefits of enterprise architecture on organizational performance with the mediating role of organizational business process improvement in the National Iranian Oil Company and seeks to answer the question: Are the technical benefits of enterprise architecture effective by mediating business process improvement on the organizational performance of the oil company?

Theoretical foundations and research background

Enterprise architecture

Enterprise architecture is an integrated and comprehensive approach that separates and analyzes the various aspects and elements of an organization (system) with an engineering perspective and includes a set of documents, models, standards and executive actions to change from the current situation to the desired situation with centrality of information technology that is implemented in a repetitive cycle and is constantly developed and updated (Mahjoorian, 2017).

There is no certain definition for the enterprise architecture. Louis and Lapalme (2018) in a study, while examining some different views and opinions in the literature referred to lack of a "common glossary", lack of a "dictionary and common meaning", lack of "common understanding and established methodology", lack of "common definitions and perspectives" and the existence of several schools of thought about enterprise architecture. (Saint-Louis & Lapalme, 2018) The following are some concepts and definitions of enterprise architecture: Gartner defines enterprise architecture as a set of business processes that helps an organization in transforming business vision and mission to an effective change at the organizational level through a clear understanding from the current situation (existing situation) and its improvement in a better situation in the future (favorable situation) (Cameron & McMillan, 2013).

Enterprise architecture is a framework for the development and management of information technology resources of the organization in order to achieve organizational goals (Khayami et al., 2016). Enterprise architecture, a tool for integrating information systems, linking business strategies with business processes, linking business goals and missions with IT goals and

missions, integrating intra-organizational and extra-organizational systems, and ultimately optimization of business processes (Sasa & Krisper, 2011). Enterprise architecture is as an integrated vision of strategy, business and technology. Analyzing and documenting the current and future/ desirable status of the organization is from an integrated perspective of strategy, business and technology (Bernard, 2012).

Enterprise architecture is like an organizational plan that outlines the mission structure and information required by the organization and the technologies needed to support them, and can provide coordination between different aspects of business planning and business activities (Van der & Van zee, 2015);(Sepahvand et al., 2017). Enterprise architecture focuses on planning and strategy and includes organizational plans for business, application software, data, and technology infrastructure to provide solutions to business problems. (Bygstad & Fallmyr, 2014); (Vaezzadeh & Nabi Elahi, 2018) Based on the definition of "ISO 15704", Enterprise architecture, description of the root design (arrangement) and connection of parts of a system (for objects with characteristics or semantic attributes or physical attributes) (Vahdat & Nazemi, 2017). Nayemi (2016) divides the types of concepts derived from Enterprise architecture in the literature into three general categories:

1. Enterprise architecture, as an architectural product or artifact that provides an abstract or concise representation of the organization as well as a program or guideline for its implementation. (Kaisler et al., 2005); (Lankhorst, 2009); (Tamm et al., 2011)
2. Enterprise architecture, in the sense that products or services, in order to achieve their support, must be accompanied (Lange et al., 2015).
3. Enterprise architecture, as the creation, maintenance and governance of enterprise architecture through its processes (i.e, making organization architecture) (Pulkkinen, 2006); (Lankhorst, 2009); (Lange, 2012); (Niemi, 2016).

Enterprise architecture and information technology

Information technology has become an integral and vital part of supporting, maintaining and growing businesses (Jairak et al, 2015); (Haes & Grembergen, 2015). High-level enterprise architecture (meta-architecture), includes the organization's information technology systems (hardware and software), the relationships between them and related to processes, functions, groups and individuals. From a functional point of view, enterprise architecture describes how IT elements work together as a whole with groups and individuals (Morganwalp & Sage, 2004); (Mirsalari, 2016).

Enterprise architecture is an effective solution for information technology management in today's advanced organizations, the main purpose of which is to align the business strategy with the information technology strategy (Lankhorst,2005). The main goal of Enterprise architecture is to create coordination between all information technology projects of the organization (Biriaei, 2008)."Information architecture", which is also known as "organizational architecture of information technology" or "organizational architecture" uses the model of Enterprise Architecture Planning (EAP) and it is considered as a solution in the context of Strategic Information Technology Planning (SITP). (Akhavan Niaki, 2001) And and its purpose is to create an integrated framework for upgrading or maintaining existing technology and acquiring new information technologies to achieve the strategic goals of the organization and its resource management (Haghighat Hosseini et al., 2016);(Minoli,2008). Framework in enterprise architecture literature means the structure, method and standards of architecture; In other words, the "framework" determines what elements and domains of architecture are included, how it is done, what products are produced, and what reference

standards and models are followed. Finally, the framework can include the necessary programs and measures for training, establishment and maintenance of enterprise architecture (Mahjoorian, 2017). Today, the scope of applications of enterprise architecture goes beyond the field of information technology. (Karami, 2015).

Base model and layers of enterprise architecture

While there are different frameworks for enterprise architecture, they are usually similar in the combination of the four core layers of business, data, application software, and technology infrastructure. The basic model of "information architecture" is the model of "enterprise architecture model", which generally includes three layers of "technology, systems and business models". The American National Institute of Standards and Technology (NIST) proposed a basic model for "information architecture" in the form of a five-layer model (pyramid), which from the top of the pyramid are: 1- work or business architecture layer 2- information architecture layer 3- information systems architecture layer 4. data architecture Layer 5. Technology architecture layer (hardware, software, communications). In this pyramid, each lower layer serves the upper layer and its operational understanding is conceivable with this basic process that technological contexts of the organization take the data from the contact environments (internal and external) and transfer it to the information systems and use the information obtained from them in the service of work processes. Enterprise architecture frameworks are organized methods for implementing enterprise architecture. The most important enterprise architecture frameworks presented in this regard are: (Davoodi & Rahnavard, 2005) 1- Zachman model (Zachman, 1987) 2- Federal (Ji & Xia, 2007) 3- The Open Group Architectural Framework (TOGAF) (Blevins et al, 2004) 4- Command, Control, Communications, Intelligence, Surveillance, and, Computers Reconnaissance (C4ISR) (Levis & Wagenhals, 2000);(Wertman, 2000), 5- Gartner's 360 degree model (Long et al, 2003)

Yamamoto et al. (2018), in a study specifies 36 key features of enterprise architecture frameworks by examining the types of frameworks in a matrix with two main dimensions: 1- feature dimensions and 2- queries. Some of the frameworks reviewed and compared are:

1- EAPM or Enterprise Architecture Planning Model (Spivak & Tyman, 2006) 2- EA3 (Bernard, 2005) 3- DYA or Dynamic Enterprise Architecture (Wagter et al, 2005) 4-EAAS or Enterprise Architecture as Strategy (Ross et al. 2006) 5. ACEA or Adaptive Cloud Enterprise Architecture (Jill, 2015) 6- TOGAF for Open Group Company,(Yamamoto et al, 2018).

Technical benefits of enterprise architecture

In this study, the technical benefits of enterprise architecture according to the research of Alberto Espinosa, Wai Fong Boh &William DeLone (2011) and Charl Van Zijl & Jean-Paul Van Belle (2014) includes three dimensions of "IT infrastructure, software development and information / data management":

Information /Data Management: Managing and collecting information from one or more sources and providing that information to one or more contacts. In other words, it is organizing and controlling the structure, composition and processing and presentation of information. Information management is closely related to data management (Khashi et al., 2017).

Software development: it is the process of imaging, specifying, designing, programming, documenting, testing and fixing bugs in making and maintaining applications, frameworks or other software components (Ebrahim Isfahani, 2018).

IT Infrastructure: Infrastructure is the foundation or framework that supports a system or organization. In computing, the IT infrastructure consists of physical and virtual resources that support the flow, storage, processing, and analysis of data (Longbottom & Bigelow, 2017).

Business process

By passing from the era of mass production to the era of information and knowledge management, all processes and activities of the organization have been affected by fundamental changes (Shao & Lin, 2016). Every business, regardless of its layout and organization, whether profit or non-profit, and its purpose, has a set of processes through which it seeks to create added value. These are the processes that start from the customer (internal or external) and consist of various activities to finally respond to the customer's request and the result is returned to him (Nazemi, 2015). The process is a series of sequential and interrelated activities that create a particular product and requires special data (input) to create this product that provide the basis for its proper operation. (Moein Najafabadi, 2015). Process is a set of activities that turn one or more inputs into outputs that create value for the internal or external customers or stakeholders (Nazemi, 2015).

Organization is a set of different processes. These processes are the basis of product planning, marketing activities, customer interaction, meeting customer demand, customer service, supply chain, financial reporting, etc. (ibid.). A business process is a set of actions that a business performs to produce a product or service (Rummler & Brache, 2012). Process represents one or a group of interactions that are done in order to convert data/inputs into outputs (Moein Najafabadi, 2015). Process is the heart of an organization's business. (Mahjoorian, 2016). A business process is a set of activities that start with one or more events and produce one or more results. The process must have the following conditions:

1- The process is performed by more than one role. 2- How to do the work, the executor of each activity, the information needs and stakeholders are clear. 3- The realization of the result of the process depends on the cooperation of the roles and the chain of activities performed (Nazemi, 2015).

Business process management

The current business environment requires integrated management and a systems perspective, and traditional structures do not respond it. Process-based management is one of the common approaches to organizational management that destroys the traditional structure of task areas. In this view, processes are considered as strategic assets of the organization and need continuous management and improvement (RanjbarFard & Jangju, 2017). Business process management is a comprehensive approach to managing an organization (Morais et al, 2014). The business process management approach emphasizes continuous improvement and optimization of business processes. (RanjbarFard & Jangju, 2017). Business process management refers to the process of automating business processes, in general or in detail, through documents, information, or tasks between individuals or activities based on a set of rules (Ranjiha, 2016).

Information technology in the business process management

Business process management is rooted in the two sciences of "management" and "information technology". With the growth and combination of these two sciences, the concept of business process management has been created. In fact, business process

management, after the process re-engineering approaches (BPR) and comprehensive quality management (TQM) in management, after the emergence of database management systems and parallel with its, organizational resource management systems and workflow management systems in information technology, in order to improve services and products were introduced. "Improvement" means all operations and changes that occur in processes to reduce cost and speed of performance and increase the quality of process output. (Soleimaniyan, 2014) Information technology causes changes in organizational processes and these changes in turn increase productivity. Organizations see the benefits of information technology in the first stage in organizational processes. Information technology first affects processes, and these processes affect tangible productivity by affecting system inputs and outputs; However, studies that directly examine the effect of productivity investments on organizational performance, ignore the direct and indirect intermediate processes that are the first postion of affected by information technology (Moghimi & Hosseinzadeh, 2013). Information technology (e-commerce and shared databases) reduces time and costs and improves the quality of "operational processes" output. In addition, expert systems, decision support systems, and information systems implementation are useful methods in "management processes." (ibide) is the interactions between people and software and the information flow of the organization that gives it life and the purpose of business process management is to be able to manage these processes in the organization and provide a tool to improve them over time. (Nazemi, 2015).

Continuous improvement of business process

The benefits of process improvement can be enjoyed at all levels of an organization; But where does the process improvement start, will have a great impact on the success of business process management over time. Conceptually, the main point is "big planning, small start and repetition". Figure 1 show how the areas of business processes are adapted in order to evaluate the optimal point for starting the establishment of business management (Moein Najafabadi, 2015).

Impact on business Process complexity

Risk management Eligibility of claims Customer Support Relief Center Property management Human resources management Transportation management	Investigating raised claims Order in cash Supplying customers and activity needs Managing services in place Orders' management Managing lifetime of products Managing validity of customers
Billing services Boarding hiring Cost estimation automation system Report management	Improving Incomes Forms management Preparing sources Creating loan fund General Administration of Benefits Reverse (logistic) Procurement

(Figure 1) Continuous improvement of business process (Moein Najafabadi, 2015)

The main points considered in Figure 1 are related to the level of impact of these processes on the business. Ideally, it should start with a high-impact, low-complexity process. (Moein Najafabadi, 2015).

In the present study, according to the research of Alberto Espinosa, Wai Fong Boh & William DeLone (2011) and Charl Van Zijl & Jean-Paul van Belle (2014), business process modification /improvement include two dimensions of "automation" and "integration":
Automation: The root of the word automation is a combination of the two words automatic and operation, which means the execution of the process without the direct intervention of the human factor and the automation of operations. Automation is the connection of information components of different parts of an organization in the form of a software context to transfer information, statistics and instructions in a fully integrated and easy way, and thus accelerate the classification,exchange, adjustment and correction of information within the organization. (Mohammadifar, 2014). Automation is the performance of similar activities performed by humans by a robot, sometimes referred to as a "robotic or automated process" (Krishnan, 2018).
Integration: An integrated management system makes all the components of a business into a single system to simplify the process of managing and executing organizational operations. In other words, it is a system that the organization uses to manage all its process affairs in order to achieve the goals of the organization and to meet the goals of its stakeholders in a balanced way (Masoudi, 2015).

Organizational Performance

In today's competitive environment, businesses are trying to boom and adapt to changes by creating sustainable competitive advantage by improving their organizational performance. Most previous studies on organizational performance have been based on financial performance, although financial indicators are not correlated with the long-term goals of a business and cannot create an advantage for organizations in a highly competitive environment (Akhavan & Yazdi Moghadam, 2013); (Davoodnia et al., 2016). There are no uniform definitions and characteristics for the performance of the organization, because performance is a multidimensional concept and determines the status of the organization in relation to competitors (Lopez et al, 2011);(Allameh et al., 2016) and There is no agreement about "what is performance". Performance can mean anything such as size/enlargement, strength/solidity, effectiveness, efficiency, quality and capacity (Grosbois, 2011);(ibid.). Theoretically, organizational performance can be defined as "comparing the value of the method created by the organization with the value that the owners expected to receive from the organization." According to this issue, organizational performance can be defined in terms of human resource management outcomes (such as relocation, absenteeism, job satisfaction, and commitment) or other organizational outcomes (such as productivity, quality, service, efficiency, and customer satisfaction). In addition, organizational performance can be measured by financial indicators (such as profit, sales, return on assets or capital or capital market results, market share, stock price and growth). The performance of an organization can vary through individuals or institutional investors from the channel of equal net profit results (Singh et al, 2012); (ibid.). Previous literature advocates measuring performance with subjective and objective tools, but certainly the use of objective tools has more validity (Camisón & López, 2014); (Davoodnia et al., 2016). Organizational performance has multiple meanings. It can be defined by the two concepts of "operational performance" and "financial performance". "Operational performance" includes productivity and quality and "financial performance" includes investment return and shareholder stock return (Altuntaş, 2014); (Hosseini et al .; 2018). Organizational performance can be defined as a multifaceted structure that has four dimensions: 1- Customer-oreinted performance 2-

Financial and market performance 3- Human resource performance 4- Organizational effectiveness. (Mithas et al., 2011); (Davoodnia et al., 2016)

The definition of performance should be obtained through cases as piloting, evaluation, efficiency, effectiveness and quality (Bartoli & Blatrix, 2015). A company has performance when it is efficient and effective, and performance is a function of the two variables "efficiency" and "effectiveness" (Siminica, 2008). The word performance is like a suitcase from the word because it covers and encompasses various concepts such as: growth, profitability, efficiency, productivity, efficiency and competition (Colase, 2009). Effective performance is measured not only based on the presentation of results (outstanding) in a field, but also by providing satisfactory performance at all scales (Forouzandeh, 2014). In the present study, according to the research of Alberto Espinosa, Wai Fong Boh & William DeLoni (2011) and Charl Van Zijl&Jean-Paul Van Belle (2014), organizational performance includes four dimensions: "revenue growth, cost reduction and timeliness of product/service and agility":

Revenue Growth: Revenue is price of goods sold or services rendered. When an organization provides services or delivers goods to customers, it receives money or other assets from them. The entry of this money or asset into the institution is called income (Alimadd & Malek Arai, 2015); (Moghadam & Shafizadeh, 2016). Revenue growth is the rate or degree that declared as a percentage that indicates whether the firm's income has increased or decreased over time (CAMPBELL, 2019).

Cost reduction: Cost is the cost of goods sold or services done in order to earn money. (Moghadam and Shafizadeh, 2016) Cost reduction is a process with the aim of reducing the unit cost of a product produced or service provided without affecting its quality by using new and improved techniques and methods and refers to permanently reduce the actual unit cost. (Surbhi, 2017).

product/service Timeliness: Timeliness of product or service, the ability of the organization in proper planning for production, packaging, transmitting and timely delivery of product at the time/term agreed with the customer shows that in creating and improving customer satisfaction or their dissatisfaction with the products of a manufacturing or service company is directly influential (Abdi, 2016).

Agility

Organizational agility is defined as the ability of an organization to quickly understand environmental changes and respond appropriately to it, and is related with improving the speed and flexibility of pervasive processes, decision-making, and problem-solving at the organizational level. Organizational agility deals with process improvements through the efficiency of activities for efficiency and effectiveness (Heckler & Powell, 2016); (Zargar, 2017). The word agile in the dictionary means fast, nimble, active and the ability to move quickly, easily and be able to think quickly and in a smart way (Khosravi Pour, 2017). The main driving force behind agility is "change". Change is happening today at a very faster rate than in the past (Tseng & Lin, 2011), And because of the rapid and widespread changes in the world around organizations, organizational agility is not considered an organizational choice, but it is an undeniable necessity and a factor in distinguishing successful and efficient organizations from inefficient organs, because more agile organizations always in responding to external environments are more successful (Harraf et al., 2015). There are many definitions of agility, but none of them contradict each other. These definitions generally show the idea of speed of action and also to introducing /identifying changes in the business environment in

order to responding appropriately to them (Vali Pourkhatir et al., 2015). In the following are mention some definitions:

Agility is the rapid discovery of competitive basis (speed, flexibility, innovation, quality and utility) through the integration of re-combinational resources and knowledge management to provide customer-desired products in a rapid changing market environment (Youssuf et al.); 2005); (Iranzadeh et al., 2016). Agility is an organizational ability to touch/feel environmental change and respond quickly, effectively and efficiently to that change (Ashrafi et al, 2005); (Overby et al, 2006); (Khodami et al., 2012); (ibid.). Agility means the ability of firms to overcome unexpected changes, survive against unprecedented business environment threats, and gaining the benefits/profits of these changes as opportunities for growth and development (Swafford et al, 2008). Agility, the ability to support and manage sudden continuous changes in order to take advantage of market opportunities is changing rapidly (Morgan, 2008); (Sarlak et al., 2016). Agility is a set of capabilities and competencies that cause the survival and development of the organization in an environment whose main feature is the existence of permanent change and uncertainty (Gligor et al., 2015); (Shahsavaripour et al., 2017) The agility of the organization has a complex structure, multidimensional and with a special framework, and from different perspectives the different dimensions have been defined for it (Mirsalari, 2016). Three desirable features for an agile system are: 1- Reusability 2- Resetability or compatibility and adaptability 3- Scalability (Valipour Khatir et al., 2015). Agility has almost rejected the old ways of doing things that were appropriate for the static conditions of traditional operations. In an ultra-competitive and high changing environment, it is necessary to create and develop organizations, facilities and equipment that are very flexible and very sensitive to change (Bandarian, 2016). Information technology, in its various forms, is an effective facilitator that can support the concept of agility (Sarlak et al., 2016).

The relationship between agility and information technology

The basis for the formation of agility is the combination of information technology, employees, the business process of the organization, innovation and facilitation of the main competitive features. Therefore, "agility" has been supported as a business paradigm of the 21st century (Sarlak et al., 2016). The use of information technology in "agility" helps to improve business operations (Musa Khani et al., 2017) (Khodabakhshi et al., 2016). The agility of an organization is a function of the information technology integrity of that organization (Swafford et al, 2008).Mohammadi and Amiri (2012) in a study showed that information technology is one of the effective factors in creating organizational agility. The success of the organization depends to a large extent on the optimal use of information technology (Khosravi Pour et al., 2014). Supplying equipment and designing information technology systems (both hard and soft) as well as the costs of training employees to use them (accepting information technology) make the organization more agile. (Khodabakhshi et al., 2016). Changing the IT landscape to emerging technologies (such as cloud computing and service-oriented architecture) can fill the gap between business needs and IT through agility, scalability, and flexibility (Bharadwaj et al., 2015); (ibide).

Domestic and foreign research background:

(Table 1) Summary of some studies of domestic/Internal researchers

Line	Research title	Researcher / year	The most important findings
1	Impact of IT capabilities on business agility	Bashokuh and Shekasteh (2013)	There is a significant relationship between IT capabilities and organizational agility.
2	The effect of using information technology on organizational performance and competitive advantage	Taghva et al (2013)	Exception of being secure, IT factors affect performance and competitive advantage.
3	Investigating the effect of information technology on the agility of production and service organizations	Khodabakhshi (2016)	Information technology has a significant effect on improving the agility of production and service organizations. The use of information technology has the greatest impact on promoting organizational competence.
4	Alignment of the organization's business with information technology through the integration of Enterprise Architecture and organizational process management and service-oriented architecture	Habibollahi et al (2016)	Integration of Enterprise architecture, organizational process management and service-oriented architecture is a suitable and effective solution to achieve the desired alignment between the organization's business and information technology and organizational performance.
5	From implementing service-oriented architecture to organizational agility with a system dynamical modeling approach	Zargar (2018)	Increasing the level of implementation of service-oriented architecture through dynamic mechanisms increases accountability and, consequently leads to organizational agility.
6	Presenting an organizational agility model based on information technology in Iranian sports organizations	Jafarzadeh Harandi (2018)	Technology infrastructure has an effect on organizational agility. Knowledge of technology, network communication, architecture and data services, technology management, technology foundations, technology compatibility and speed are among the main axes of this infrastructure. The presumption of organizational agility communication is also strengthened.
7	Investigating the relationship between ICT understanding and organizational performance through supply chain management and business process management	Keshavarz et al (2018)	There is a direct and significant relationship between understanding ICT and organizational performance with the mediating role of supply chain management and business process management.

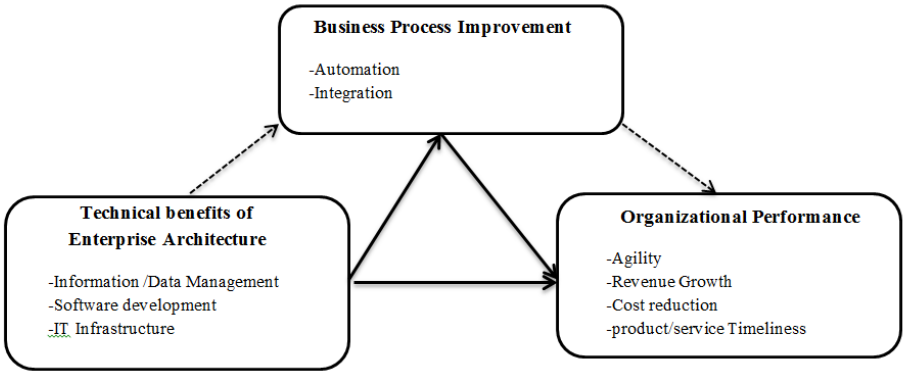
(Table 2) Summary of some studies of foreign/external researchers

1	Strategic model for selecting agile virtual organization partners	Sarkis et al (2007)	In agile virtual organizations, there is a significant relationship between the dimensions of agility and the structure of information and communication technology in the selection of partners and the conceptual model has a favorable fitness.
2	The impact of business intelligence and IT infrastructure flexibility on competitive advantage: An organizational agility perspective	Chen et al. (2012)	Business intelligence and information technology infrastructure flexibility are significant sources of organizational agility. Organizational agility affects competitive advantage in part through the effects of business intelligence and the flexibility of IT infrastructures.
3	Organizational impact of Enterprise Architecture and business process capability in South African organizations	Van Zijl and Van Belle (2014)	Enterprise architecture is an operation that is located within the organization and ensures that the performance of information systems in the organization is not a bottleneck for organizational growth and agility. Enterprise architecture facilitates business process automation more than business agility and has real organizational effects, especially long-term cost reduction and organizational agility.
4	A business process model for IT management based on Enterprise Architecture	Montilova et al (2014)	The successful usage of information technology in an organization depends on the business processes used for manage such technologies. A business process model for IT management puts the concept of Enterprise Architecture at the heart of the organization's IT management activities.
5	The role of coordinate IT applications in improving agility and performance	Cobors et al (2017)	Coordination of IT applications affects the performance of the company. IT program coordination affects the company's performance by mediating the agility process, and the company's strategic orientation modulates the effect of the IT program coordination capability on the agility process.
6	Investigating the relationships between IT competence, innovation capacity and organizational agility	Ravichadran (2018)	IT companies, the superior capabilities of information systems along with an aggressive IT investment orientation, create digital platforms that enable their agility. Organizational agility has a positive effect on company performance.
7	The role of information systems in Enterprise Architecture and their impact on business performance	Casimpsp (2018)	There is a positive and significant relationship between information technology, technical alignment, information technology capabilities, information effectiveness, information technology effectiveness, Enterprise architecture, business processes and technology, and business performance.
8	Information technology and the search for organizational agility: A systematic review for future research	Talon et al (2019)	IT helps with profits, revenue growth, market investment, stock returns, asset returns and other performance metrics. Research examines the relationship between information technology and organizational agility as well as the agility literature.

9	The impact of information system capabilities on company performance: The Role of organizational agility and industry technology Intensity	Felipe Laos et al (2019)	Information systems capabilities affect company performance through full mediation of organizational agility.

Theoretical framework and hypotheses

This study according to the literature and the theoretical framework of the research of Alberto Espinosa, Wai Fong Boh & William Delone (2011) and Charl Van Zijl & Jean-Paul van Belle (2014) evaluates the effect of technical benefits of enterprise architecture on organizational performance considering mediating role of the improvement of organization's business process according to Figure 2. This framework can be used as a reference to build a structural model to assess the organizational impact of enterprise architecture (Espinosa et al., 2011).



(Figure 2) Theoretical framework of the research

Research hypotheses are:

Hypothesis 1- The technical benefits of enterprise architecture have a positive and significant effect on organizational performance.

Hypothesis 2 - The technical benefits of enterprise architecture have a positive and significant effect on business process improvement.

Hypothesis 3- Business process improvement has a positive and significant effect on organizational performance.

Hypothesis 4: The technical benefits of enterprise architecture with the mediating role of business process improvement have a positive and significant effect on organizational performance.

Research methodology

This research is applied objectively. The method of data collection for testing hypotheses is descriptive-correlational. The statistical population in this research is the managers and employees of the National Oil Company and the statistical population in this research is 5000 people. Using Cochran's formula, the desired sample size in this study was calculated 356 people and 356 questionnaires were distributed and collected using non-random sampling method.

$$n = \frac{NZ^2P(1-P)}{d^2(N-1)+Z^2P(1-P)} = \frac{5000\times1/96^2\times0/5\times0/5}{\%5^2\times5000\text{-}1+1/96^2\times0/5\times0/5} = 356 \quad (1)$$

According to the type of data research, data collection research has been prepared through field survey with the distribution of a questionnaire consisting of 32 questions. In this

questionnaire, in order to facilitate and expedite the collection of information, the questions are closed and the Likert scale (sequential scale) has been used, and the sources of variables and items of the questionnaire are as described in Table 3.

(Table 3) Variables and how to measure

Variable	Role	Questions No.	Sources
Technical benefits of enterprise architecture	Independent	1 to 14	Quiroz et al. (2018), Al-Zoubi et al. (2018), Joseph and Corlia (2017), Bazai and Ali Asgari (2017), Buchholt (2014), Van Zijl et al. (2014), Lucy (2014), Lee Hong and Et al. (2013), Verin and Silvius (2012), Nasif (2012), Espinosa et al. (2011), Hoffman (2007), Jafarzadeh Zarandi et al. (2018), Taleghani and Nourbakhsh (2014), Haghighat Hosseini et al. (2016)), Ghadrdan et al. (2012)
Benefits of business processes	Mediating	15 to 21	Ayub (2019), Bazai and Ali Asgari (2017), Harmon (2016), Forturio et al. (2016), Lucy (2014), Kanter (2014), Van Zijl et al. (2014), Lee Hong et al. (2013) , Varin and Silvius (2011), Kim et al. (2011), Klose (2011), Haghighat Hosseini et al. (2015), Taleghani and Nourbakhsh (2014), Mohammadifar (2014)
Impacts of organizational performance	Dependent	22 to 32	Quiroz et al. (2018), Elzoui et al. (2018), Shanks et al. (2018), Arti Karandi (2017), Joseph and Cornia (2017), Al-Hurabi (2017), Jahromi and Smolander (2017), Lortorbo et al. (2016), Cameron (2015), Buchholt (2014), Kanter (2014), Lee Hong et al. (2013), Norman et al. (2013), Nassif (2012), Verin and Silvius (2012), Kim et al. (2011), Hoffman (2007), Naimi (2006), Jafarzadeh Zarandi et al. (2015), Haghighat Hosseini et al. (2015), Vali Pourkhatir et al. (2015), Talaghani and Nourbakhsh (2014)

In this research, content validity ratio (CVR) has been used to assess the validity of the tool. The results of the content validity ratio index values show that all 32 items of the questionnaire gained the score equal to or above the standard, so the questions were identified appropriate and no item was removed by calculating the score. To assess the reliability, a prototype with a volume of 30 respondents was distributed for the pre-test and then using the obtained data, the confidence coefficient was calculated by Cronbach's alpha method by SPSS software for all questions and the alpha coefficient values in the pretest were 0.801 that was higher than 70% and therefore this questionnaire has acceptable reliability. Table 4 shows the Cronbach's alpha coefficient of the variables.

(Table 4) Cronbach's alpha coefficient of the questionnaire

Cronbach's alpha	Scale	Number	Variable
0.91	5 Likert spectrum	1 to 14	Technical benefits of enterprise architecture
0.82	5 Likert spectrum	15 to 21	Business processes
0.86	5 Likert spectrum	22 to 32	organization performance

Findings (data analysis)

In this research, in order to analyze the research data, descriptive and inferential statistics have been used and for the analysis of inferential statistics, correlation test and structural equation modeling have been used. SPSS software was used to investigate the normality of statistical distribution and LISREL was used to investigate the causal relationships between research hypotheses. Descriptive statistics analysis of research variables was obtained using mean statistics and standard deviation according to Table 5.

(Table 5) Summary of the status of variables

Variables	**Mean**	**SD**	Skewness	Elongation
Information / data management	3.41	1.15	0.496-	0.554-
software development	3.42	1.16	0.501-	0.615-
IT infrastructure	3.53	1.14	0.575-	0.468
Technical benefits of enterprise architecture	3.45	1.15	0.520-	0.551-
automation	3.49	1.14	0.585-	0.502-
Integrity	3.51	1.11	0.515-	0.498-
Benefits of business processes	3.50	1.12	0.545-	0.500-
Agility	3.50	1.10	0.449-	0.559-
Timeliness of product/ service and services	3.34	1.16	0.370-	0.769-
Income growth	3.45	1.14	0.530-	0.487-
Reducing costs	3.36	1.16	0.470-	0.665-
Organizational Performance	3.43	1.13	0.444-	0.634-

Statistical results show that the average response to variables is higher than the average (number 3) compared to the scale. Therefore, it can be concluded that the perceptual state of population from the research variables is at a desirable level. In addition, the elongation and skewness obtained from each variable are in the range of 2- and 2+, so the research data have a normal distribution.

The significance of the chi-square test or the Bartlett sphericity is the minimum requirement for the use of structural equations. In Bartlett test, rejecting the null hypothesis indicates that the correlation matrix has significant information and there are minimum conditions for performing factor analysis and structural equations (Sarmad et al., 2009).

(Table 6) Sample test adequacy result

KMO	Bartlett test		
	Chi square	df	Significant number
0.908	3636	496	0.000

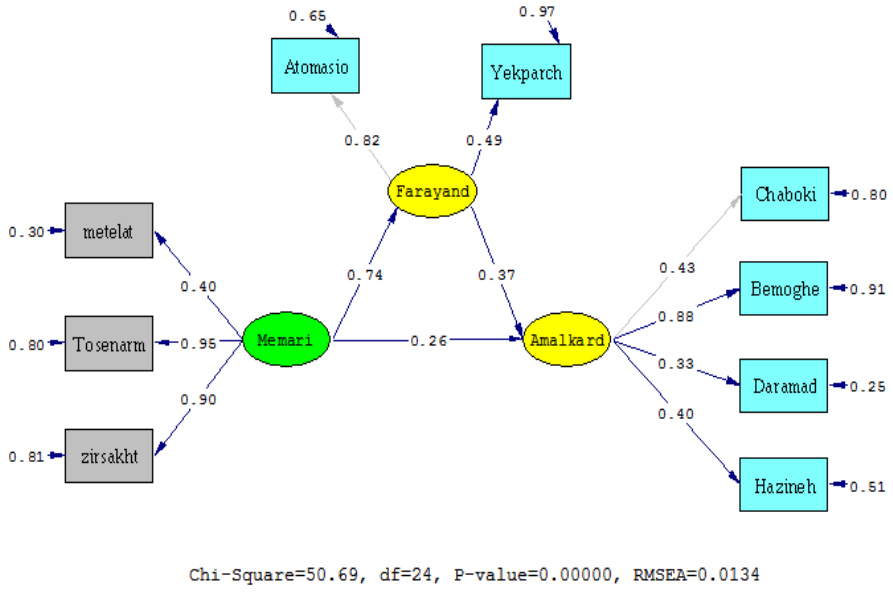
Table 6 shows that the KMO value is equal to 0.908 and with a significant level (0.000), Bartlett test is significant; therefore, due to the adequacy of sampling and the significance of Bartlett test, the data correlation matrix is possible to enter the structural equations.

Analysis of structural equations

First, the validity of the construct must be tested using the confirmatory factor analysis test for inferential analysis, before testing the hypotheses. By examining the model diagram of measuring the technical benefits of enterprise architecture using factor analysis in standard and significant mode, the value of chi-square division on the degree of freedom was 2.75, which is smaller than the standard 3, and the value of RMSEA was 0.071, which is less than 0.08. Also, by examining the model diagram of measuring the variables of business process benefits using standard and significant factor analysis, the value of chi-square division on the degree of freedom was 2.78, which is smaller than the standard 3, and the value of RMSEA was 0.066, which is smaller than 0.08. In addition, by examining the model diagram of measuring the organizational performance variable using standard and significant factor analysis, the value of chi-square division on the degree of freedom was 1.85, which is smaller than the standard 3, and the value of RMSEA was 0.051, which is less than 0.08. Therefore, this pattern is fitting. In addition, the factor loads related to questions above 50% and the significant number obtained is also higher than the number 1.96. Also, the obtained P-value is less than 5%, so the membership of all questions in the research variables, including the technical benefits of enterprise architecture, business process and organizational performance is accepted.

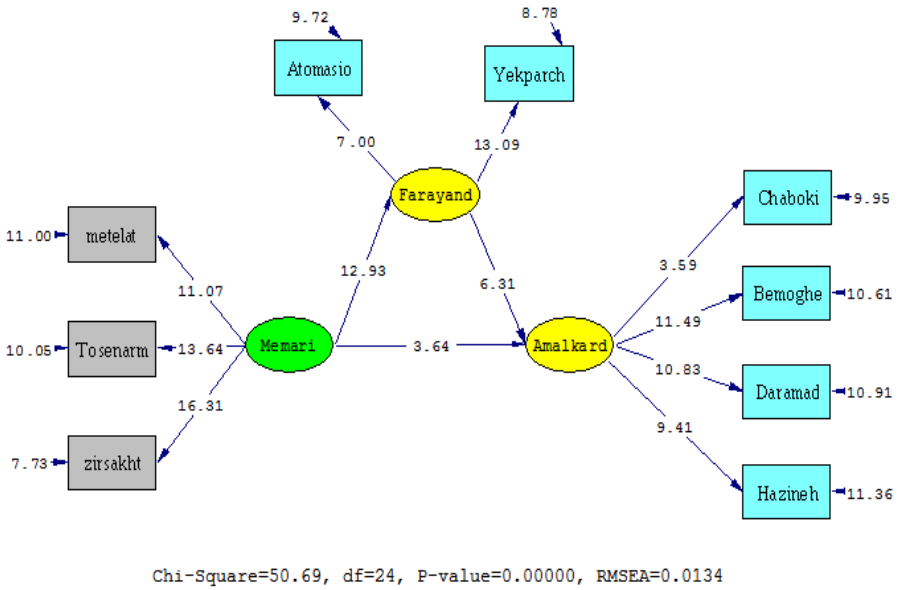
Evaluation of structural model

The main hypothesis of the research was tested using the structural equation model (LISREL approach) and the test results of the main hypothesis are reflected in Figures 3 and 4. The conceptual model fits are examined in two stages: 1- model measurement and 2- structural model evaluation



(Figure 3) Measuring the final model and the results of the hypotheses in the standard mode

According to the fitted model in Figure 3, it can be seen that the value of the significant level is 0.0000, which indicates the confirmation of the null hypothesis that the conceptual model of the research is appropriate.



(Figure 4) Measuring the final model and the results of the hypotheses in a significant mode

The values placed on each of the arrows in Figure 4 indicate whether each of the relationships shown is significant or not. If the T-Value value is greater than 1.96, the relationship shown is significant and all relationships are significant.

Fitness of the final model

The results show that the ratio of chi-square with a value of 50.69 to a degree of freedom of 24 is equal to 2.11, which is less than three and is acceptable. Also, the value of the second root index of the mean of the remaining squares or RMSEA (0.013), due to being smaller than 0.08, is a more appropriate criterion than the significance level of Chi-square test, and considering that it is less than 0.05, it confirms the goodness of the model. Fitness indicators in the final model extracted from LISREL software are presented in Table 7.

(Table 7) Fitness indicators of the final model

Fit index	Abbreviation	Desirable value	Reported value	Result
Root index of standardized residual mean square	SRMR	Less than 0.08	0.057	Accepted
Fit goodness index	GFI	0.9 and higher	0.90	Accepted
The root of the mean of the remaining squares	RMR	Higher than 0.09	0.60	Accepted
Normal to fit index	NFI	0.9 and higher	0.94	Accepted
Non-normal to fit index	NNFI	0.9 and higher	0.92	Accepted
Adaptive Fit Index	CFI	0.9 and higher	0.95	Accepted
Increasing fit index	IFI	0.9 and higher	0.95	Accepted
Adjusted goodness-of-fit index	AGFI	0.9 and higher	0.91	Accepted
Chi square-degree of freedom	X2 / DF	Between 1 to 5	2.11	Accepted
The second root of the mean of the remaining squares	RMSEA	Between 0 to 1 Less than 0.08	0.013	Accepted

According to Table 7, the fit indices confirm the fit of the model. The criteria of RMSIA, P-Value and Chi-square divided by the degree of freedom are also at an acceptable level and the

model has a suitable fitness. The data of this research have a good fit with the factor structure and theoretical basis of the research and this indicates that the model is in line with theoretical structures. The measurement of hidden variables has the necessary adequacy and fit, and as a result, the results of estimating the research model are reliable and confidant.

Research hypotheses test results

According to Figures (3) and (4), statistical analysis shows that in testing the first hypothesis, the path coefficient between the two variables of technical benefits of enterprise architecture on organizational performance in standard mode is equal to (0.26), also the value of t-statistic for this coefficient is equal to (3.64) and is greater than 1.96. In testing the second hypothesis, the path coefficient between the two variables of technical benefits of enterprise architecture on business process improvement in standard mode is equal to (0.74), also the value of t-statistic for this coefficient is equal to (12.93) and more than 1.96. Also, in testing the third hypothesis, the path coefficient between the two variables of business process improvement on organizational performance in standard mode is equal to (0.37), also the value of t-statistic for this coefficient is equal to (6.31) and more than 1.96. In general, the results of model estimation indicate that the technical benefits of enterprise architecture have a positive and significant effect on organizational performance and technical benefits of enterprise architecture on business process improvement and business process improvement on organizational performance.

Test of the fourth / mediator hypothesis: In order to examine the mediating effect of business process improvement in the hypothesis, the direct effect of the two structures with the indirect effect in the case of involving the mediator variable should be examined so that if increasing effect could be accepted the mediator. According to Figures (3) and (4), statistical analysis shows that the path coefficient between the two variables of technical benefits of enterprise architecture on business process improvement is equal (0.74) and the path coefficient between the two variables of business process improvement on organizational performance is equal (0.37) and also the value of t-statistic for these coefficients is more than 1.96, which indicates the significance of these coefficients. In this hypothesis, despite the greater effect of the indirect path of 27.3% than the direct path of 26%, it can be concluded that the mediating variable increases the effect and the mediating role is confirmed. Therefore, the technical benefits of enterprise architecture with the mediating role of business process improvement have a positive and significant effect on organizational performance.

(Table 8) Summary of test results of mediator hypothesis / fourth hypothesis

Result	Total effect	Direct effect +indirect effect	Hypothesis
Confirmed	53.3%	27.3% + 26%	The technical benefits of enterprise architecture with the mediating role of business process improvement have a positive and significant effect on organizational performance

The test results of the hypotheses are summarized in Table 9.

(Table 9) Summary of test results of hypotheses

Result	Significant coefficient	Path coefficient	Research hypotheses
Confirmed	3.64	0.26	1- The technical benefits of enterprise architecture have a positive and significant effect on organizational performance.
Confirmed	12.93	0.74	2- The technical benefits of enterprise architecture have a positive and significant effect on business process improvement.
Confirmed	6.31	0.37	3- The business process improvement has a positive and significant effect on organizational performance.
Confirmed	-	0.27	4- The technical benefits of enterprise architecture with the mediating role of business process improvement have a significant effect on organizational performance.

Discussion, conclusion and suggestion

The importance of using enterprise architecture in general is as a tool to deal with the risks of business and gain better performance (Moghimi et al., 2013). According to the theoretical foundations in this study, 4 hypotheses were proposed and all hypotheses were confirmed. The results of research hypotheses indicate that the technical benefits of enterprise architecture have a positive and significant effect on organizational performance in the National Oil Company and the first hypothesis is confirmed. This hypothesis is consistent with the researches of Mohammadi & Amiri (2012), Bashokuh & Shekaste Band (2013), Davoodnia et al. (2015), Khodabakhshi et al. (2016), Sarlak et al. (2016), Zargar (2015), Yazdanpanah et al. 2017), Jafarzadeh Zarandi et al. (2018), Li et al. (2006), Kisperska et al. (2009), Sarkis et al. (2007), Chen (2012), Ravichadoran (2018), Kasemasp (2018) and Tallon et al. 2019). Also, the technical benefits of enterprise architecture have a positive and significant effect on business process improvement and the second research hypothesis is confirmed. The results of this hypothesis are consistent with the research findings of Habib Elahi et al. (2016), Van Zijl &Van Belle (2014) and Montilova et al. (2014). Business process improvement also has a positive and significant effect on organizational performance and the third hypothesis of this study is confirmed which is consistent with the results of Keshavarz et al. (2015). Finally, the fourth finding of the study showed that the technical benefits of organizational architecture with a mediating role of business process improvement have a positive and significant effect on organizational performance and the fourth hypothesis is confirmed which is consistent with results of Habib Elahi et al. (2016) and Flip Lanos et al. (2019).

Practical suggestions of this research are: 1- Managers by monitoring the internal and external environment of the organization and applying feedback to the process of architecture development and with applying the appropriate feedback should practice for agility of organizational architecture. 2- Before implementation, first, coordination, alignment and synchronization of enterprise architecture with business processes to be done. 3- Identifying and showing weaknesses in processes and replacing resources, integration and relationship between organizational architecture and business processes to be evaluated. 4- Process design and review system should develop and implemented and activities without added value to be eliminated and plans, forecasts and alternatives should evaluated quickly. 5- Database of

indicators to determine the effectiveness of the processes should formulate and based on that, the processes should test/benchmark and review. 6. Managers should identify and eliminate processes in which a similar or additional activity is performed in different places by different people or both. 7. In enterprise architecture, its main components, which are information, processes, organizational positions, rules, methods, etc., must be related to each other in a complex and flexible way. Enterprise architecture must have a high degree of flexibility.
For future research, it is suggested that 1- This model to be reviewed among other public and private companies and the results to be studied comparatively. 2. Researchers should also use other data collection methods such as interviews and other computational techniques, fuzzy and comparative calculations for obtaining more information. 3- The role of information technology strategies on the success of enterprise architecture should be examined. 4- The role of enterprise technical architecture on gaining competitive advantage and sustainable performance in other companies should be examined. 5- Due to the limitations of the research, while identifying and examining other indicators of its variables, the moderating role of organizational intelligence on the variables should be examined.

Sources

Persian Sources

1) Ebrahim Isfahani, A. (2018). Software development and construction .http: //mediasoft.ir

2) Ahmadi, H. (2017). The position of evaluation in the process of enterprise architecture of information technology and analysis of qualitative evaluation methods of enterprise architecture, the first conference on the development of enterprise architecture of Shahid Beheshti University.

3) Akhavan, p. And Yazdi Moghaddam, J. (2013). Investigating the combined role of ethical principles and knowledge management on organizational performance. Journal of Ethics in Science and Technology, 8(2).

4) Amiri, Y. And Mohammadi, A. (2012). Providing a structural-interpretive model of achieving agility through information technology in manufacturing organizations. Information Technology Management, 4(13), 115-134. Iranzadeh, S., Mesbahi Jahromi, N., Shokri, A., and Ebrahimi, R. (2016). Investigating the Relationship between Organizational Agility and Productivity of Dana Insurance Company Employees in East Azarbaijan Province. Productivity Management, 10(38), 117–145.

5) Bashokuh, M. Shekasteh Band, M (2013). The Impact of ITS Capabilities on Business Agility. Smart Business Management Studies, 1(4), 1-24.

6) Biriaei, H. (2008). Providing a framework for evaluating the architectural maturity of the organization, Master Thesis in Information Technology Management, Faculty of Management, and University of Tehran.

7) Taqwa, M., Hosseini Bamkan, M., and Fallah Lajimi, H. (2013). The effect of using information technology on organizational performance and competitive advantage.

Quarterly Journal of Information Technology Management Studies, 2(5), 1-17.

8) Jafarzadeh Zarandi, M., Sharifian, A., and Ghahraman Tabrizi, K. (2018). Presenting an organizational agility model based on information technology in Iranian sports organizations. Sports Management Studies, 10(52), 137-160.

9) Haj Mohammad Hassani, M. (2017). Presenting a solution in the field of combining e-government interoperability and enterprise architecture to improve the organizational dimension of interoperability, the first conference on enterprise architecture advances of Shahid Beheshti University.

10) Habib Elahi, M. Nabi Elahi, A (2016) Alignment of the organization's business with information technology: with the approach of integration of enterprise architecture and management of organizational processes and service-oriented architecture Case study: Islamic Azad University, International Conference on Computer Engineering and Science.

11) Haghighat Hosseini, A., Bobershad, H., and Saghafi F. (2016). Identifying the best enterprise architecture framework of the hospital with the implementation approach in Iran. Scientific Journal of the Medical System Organization of the Islamic Republic of Iran. 34(1), 31-44.

12) Khashi, A., Khajeh Ali Jahantighi, Z., and Okati, S. (2017). Cybernetics, Information Management and Document Management Case Study, 2nd International Conference on Management and Accounting.

13) Khodabakhshi, M., Tulayi, R., and Taybi Abolhassani, A. (2016). Investigating the effect of information technology on the agility of production and service organizations. Science and Technology Policy, 6(4), 13-22.

14) Khodami, S., Khodadad Hosseini, H., Meshbaki, A., and Azar, A. (2012). Designing a Customer Agility Model with a Dynamic Organizational Capabilities Approach: Investigating the Role of IT Competence, Entrepreneurial Awareness and Market Wisdom. Scientific Journal of Modern Marketing Research, 2(1), 1-24.

15) Khosravi Pour, A. (2017). The effect of ICT internal variables on organizational agility in public universities in Khuzestan province (Case study: Ramin Khuzestan University of Agriculture and Natural Resources). Quarterly Journal of Educational Management Innovations, 12(2), 52-64.

16) Khosravi Pour, A. Amirnejad, Q. (2014). The effect of information and communication technology on organizational agility in public universities in Khuzestan province (Case study: Shahid Chamran University of Ahvaz). Social Development, 8(4), 47-66.

17) Khayyam Shahraki, M., Alavi, S., Yazd Khasti, A., and Davarpanah Jazi, M. (2017). The Role of Information Technology in Organizational Architecture, International Conference

on Information Engineering and Technology, Tehran.

18) Khayami, R., degree, A., and Parvin Nia, A. (2016) Enterprise Architecture in Practice (Principles, Concepts and Perspectives in Enterprise Architecture Thinking), Deputy of Urban Planning and Development, District 16, Department of Organization and Improvement of Methods.

19) Davoodnia, B. Zarei Zavaraki, A. (2016). A comparative study of educational management and intelligent technology program in Australia, Malaysia and Iran. New Educational Thoughts, 10(2), 59-91.

20) Davoodnia, D., Abbaspour, F., and Farzin Mehr, B. (2016). Investigating the effect of technology readiness on organizational performance through technology acceptance. Development Management Process Quarterly, 29(1).

21) Ranjbar Fard, M. Jangju, Z. (2017). An overview of maturity models in the field of business process management. Journal of Standard and Quality Management, 7(24), 32-46.

22) Zargar, M. (2018). From implementing service-oriented architecture to organizational agility with a system dynamics modeling approach. Journal of Information Processing and Management, 33(4), 94

23) Sepahvand, R., Saedi, A., and Shariatnejad, A. (2017). Designing an architectural model of human capital in government organizations using grounded theory. Journal of Human Resource Management and Support Development, No. 44.

24) Sarlak, M., Del Angizan, S., and Kakeh Barai, A. (2016). Investigating the effective factors on creating agile organizations based on Goldman and Nagel model. Journal of Development and Transformation Management, 24, 1-10.

25) Soleimaniyan, A. Chang, J .; (2014). Business Process Management Systems, translation of Business Process Management Systems, Chapter 2, bpms.rayvarz.com

26) Shahsavaripour, N., Rezvan Doost, Sh., Mirzaei, A., and Heidarbigi, Sh. (2017). The relationship between the alignment of IT strategy and business strategy with organizational agility in software companies. Quarterly Journal of Information Technology Management Studies, 5(19), 75-103.

27) Taleghani, M., Nourbakhsh, M., and Langroudi, M. (2014). The effect of using information technology on the efficiency of Gilan Regional Electricity Company. Development and Transformation Management Quarterly, 6(19), 67-76.

28) Abdi, H. (2016). A review of the importance of timely delivery index (OTD) and review of practical and operational solutions to improve it, http://www.hosseinabdi.ir

29) Alimadad, M. Malek Araiy, N. (2015). Principles of Accounting (Edition 33). Tehran: Auditing Organization, Volume I, pp.156.

30) Allameh, M., Askari, N., and Khazaei, J. (2016). Investigating the effect of organizational culture on organizational performance: Emphasis on the role of organizational knowledge sharing and agility with a balanced scorecard approach. Organizational Culture Management. 14(2), 453-474.

31) Ghadrdan, A., Davari, A., and Shahbaz Moradi, S. (2012). Evaluation of organizational architecture of National Iranian Oil Company from the perspective of human resources experts. Exploration and Production Monthly, No. 92.

32) Keshavarz, S., Mahnaz Q., Sahraeian, K., and Taheri, Sh. (2018). Investigating the Relationship between ICT Understanding and Organizational Performance with the Mediating Role of Supply Chain Management and Business Process Management of Shiraz Industrial Town Companies, 2nd International Conference on New Developments in Management, Economics and Accounting, Tehran.

33) Karami, R. (2015). Proposing a research program: Identifying and modeling applied scenarios of organizational architecture. Informatics Report, No. 225.

34) Mohammadifar. (2014). Questionnaire on the effect of automation on unemployment. https://parsmodir.com/db/theory/automation.php

35) Mohammadi A. Amiri, Y. (2012). Providing an interpretive structural model for achieving agility through information technology in manufacturing organizations. Journal of Information Technology Management, 4(13), 115-134.

36) Masoudi, M. (2015). Investigating the Impact of Establishing an Integrated Management System (IMS) on Organizational Performance with Organizational Excellence Model (EFQM) Approach, the Second International Conference on New Research in Management, Economics and Accounting.

37) Moein Najafabadi, A. (2015). Approaches and Models in Business Process Management (BPM), e-book collection of practical booklets in the field of integrated and comprehensive strategic change management.

38) Moghaddam, A. Shafizadeh, A. (2015). Book of Accounting Principles 1 (17th edition). Publication of Payame Noor University. P.104.

39) Moghimi, M. Hosseinzadeh, M. (2013). Presenting a model to study the effect of information technology on organizational productivity with a process-oriented approach (Fars Province Industries). Information Technology Management, 5(4), 245-266.

40) Musa Khani, M., Manian, A., Mahmoudi, J., and Kargar, M. (2017). Providing a comprehensive framework for IT management and localization for the Iranian automotive industry (Atlas Automobile). Information Technology Management, 9(1), 65-143.

41) Mahjoorian, A. (2016). Workshop: Business Process Management System, Ministry of Communications and Information Technology, Iran Information Technology Organization.

42) Mahjoorian, A. (2017). Enterprise architecture from the perspective of managers. KarizSystem.ir, Soea.sbu.ac.ir

43) Mirsalari, R., Ranjbarfard, M., and Khadivar, A. (2016). Investigating the role of enterprise architecture in creating organizational agility through the capability of information technology, Master's thesis in Information Technology Management, majoring in advanced information systems, Faculty of Social and Economic Sciences, Al-Zahra University.

44) Nazemi A (2015) Business Process Reengineering Workshop (Profession), Shahid Beheshti University, Faculty of Computer Engineering and Sciences.

45) Nik Farjam, S. (2014) Business Process, translation of "what is the Definition of Business Process".

46) Vaezzadeh Dehghi, F. Nabi Elahi, A (2018). SAFe Framework: A scalable and agile approach to implementing large enterprise architecture projects. The Second National Conference on Organizational Architecture Advances, Shiraz.

47) Valipour Khatir, M., Mohammadpour Imran, M., and Akbarzadeh, Z. (2015). Indicators of Agility Organizational Using Technique Decision making Evaluation of multi-fuzzy criteria (Electricity Development Organization). Innovation and Value Creation, 7, 1-18.

48) Vahdat, D. Nazemi, A (2017). A Comparison of the Relationship between Organizational Architecture Development Maturity and Individual Satisfaction and Examining the Reasons for Organizations' Approach to Architectural Solutions, The First National Conference on Organizational Architecture Advances, Tehran.

49) Yazdanpanah, A., Mohammadi, F., Nezami, N., Sharafi, R., and Keshavarz, M. (2017). Development of a communication model of organizational agility and competitive intelligence mediated by information technology in the staff of the Ministry of Sports and Youth. Journal of Educational Sciences and Psychology, 4(3), 81-93.

Latin Sources

50) Altuntaş, G., Semerciöz F., Mert, A., Pehlivan, Ça. (2014). Industry forces, competitive and functional strategies and organizational performance: Evidence from restaurants in Istanbul, Turkey , Procedia, Social and Behavioral Sciences, 150, 300-309.

51) Ashrafi, N., Xu, P., Sathasivam, M., Kuilboer, j. p., Heimann, D., Waage, F. (2005). A framework for implementing business agility through knowledge management systems. In: Seventh IEEE International Conference on ECommerce Technology Workshops (CECW05), pp.116-121.

52) Bartoli, A., Blatrix, C. (2015). Management dans les organizations publiques - 4ème édition. Dunod, Paris.

53) Bernard, S. A.(2012). An Introduction to Enterprise Architecture (3rded.), AuthorHouse, Bloomington. http://spots.augusta.edu/tschultz/resources/eBooks/IntroEntArch/FrontMatter.pdf

54) Bharadwaj, S., Chauhan, S., & Raman, A. (2015). Achieving business agility through service-oriented architecture in recovering markets. Springer Proceeding in Business and Economics, 23(5), 15-26.

55) Blevins, T., Spencer, J.J., & Waskiewicz, F. (2004). TOGAF ADM and MDA, Open Group OMG.

56) Blevins, T., Dandashi, F., Tolbert, M. (2010). The Open Group Architecture Framework (TOGAF™9) and the US Department of Defense Architecture Framework 2.0 (DoDAF 2.0).

57) Bygstad, B., & Fallmyr, T. (2014). Enterprise architecture practice and organizational agility: An exploratory study. In 47th Hawaii International Conference on System Sciences (pp. 3788-3797).

58) Cameron, B. H., & McMillan, E. (2013). Analyzing the current trends in enterprise architecture frameworks. Journal of Enterprise Architecture, 9(1), 60-71.

59) Cameron, B. H. (2015). Methods for Defining and Analyzing Key EA Performance Metrics. Business & Enterprise Architecture, 18(2).

60) Camisón, C., & Villar-López, A. (2014). Organizational innovation as an enabler of technological innovation capabilities and firm performance. Journal of business research, 67(1), 2891-2902.

61) CAMPBELL, P. (2019). WHAT IS REVENUE GROWTH AND HOW TO CALCULATE IT. Retrieved from https://www.profitwell.com/blog/revenue-growth

62) Chen, X. (2012). Impact of Business Intelligence and IT Infrastructure Flexibility on Competitive Advantage: An Organizational Agility Perspective, University of Nebraska-LincolnFollow.

63) Dietz, J., & Hoogervorst, J. (2008). Enterprise Architecture in Enterprise Engineering. DOI:10.18417/ emisa.3.1.1

64) Espinosa, J.A., Boh, W.F., DeLone, W. (2011).The Organizational Impact of Enterprise Architecture: A Research Framework, 44th Hawaii International Conference on System SciencesJanuary (pp. 1–10).

65) Felipe Llanos, C.M., Leidner D.E., Roldán J.L., Leal-Rodríguez, A.L. (2019). Impact of IS Capabilities on Firm Performance: The Roles of Organizational Agility and Industry Technology Intensity. DOI: 10.1111/deci.12379.

66) Gligor, D. M., Esmark, C. L., & Holcomb, M. C. (2015). Performance outcomes of supply chain agility: When should you be agile. Journal of Operations Management, 33, 71-82.

67) Grosbois, J.F. (2011). The impact of knowledge management practices on nuclear power plant organization performance. Thesis of PhD, Carleton University, Ottawa, Ontario, Canada
68) Haes, S., & Grembergen, W.V. (2015). Enterprise governance of information technology. Switzerland:
69) Springer.
70) Harraf, A., Wanasika, I., Tate, K., Talbott K. (2015). Organizational Agility. Journal of Applied Business Research (JABR), 31(2), 675-86.
71) Heckler, J., & Powell, A. (2016). IT and organizational agility: A review of major findings IT and organizational agility: A review of major findings. Proceedings of the Eleventh Midwest Association for Information Systems Conference (pp. 19-20). Milwaukee, Wisconsin.
72) Jairak, K., Praneetpolgrang, P., & Subsermsri, P. (2015). Information technology governance practices based on sufficiency economy philosophy in the Thai university sector. Information Technology & People, 28(1), 195-223.
73) Ji, W., & Xia, A. (2007). Federal enterprise architecture framework, Comput. Integr. Manuf. Syst. BEIJING, 13(1), 57.
74) Kaisler, S. H., Armour, F., and Valivullah, M. (2005). Enterprise Architecting: Critical Problems Proc. of the 38th Hawaii Int'l Conf. System Sciences, 8(8), 224.2
75) Kaisler, S.H., Armour, F.J., and Valivullah, M. (2006).Enterprise Architecting: Critical Problems. in 39th Hawaiian International Conference on System Sciences(HICSS). Poipu, Kauai, Hawaii: IEEE.
76) Kasemsap, K. (2018). The role of information system within enterprise architecture and their impact on business performance. In Global Business Expansion: Concepts, Methodologies, Tools, and Applications (pp.1078-1102). IGI Global.
77) Kisperska-Moron, D. & Swierczek, A. (2009). The agile capabilities of Polish companies in the supply chain: anempirical study. International. Journal of Production Economics, 118, 217–224.
78) Krishnan, S. (2018). What is automation in information technology? Retrieved from https://www.quora.com/What-is-automation-in-information-technology.
79) Kuo, Y. L. (2013). Technology readiness as moderator for construction company performance. Industrial Management & Data Systems, 113(4), 558–572. http://dx.doi.org/10.1108/02635571311322793
80) Lange, M., Mendling, J., & Recker, J. (2015). An empirical analysis of the factors and measures of enterprise architecture management success. European Journal of Information Systems, 1–21.
81) Lange, M., Mendling, J., Recker, J. (2012). Realizing Benefits from Enterprise Architecture: a Measurement Model, ECIS.
82) Lankhorst, M. (2005). Enterprise Architecture at Work-Modeling, Communication and analysis. SpringerVerlag Berlin Heidelberg, © Printed in Germany.
83) Lankhorst, M. (2009). Enterprise architecture at work: Modelling, communication and analysis (2nd ed). Berlin, Germany: Springer.
84) Li, S., & Lin, B. (2006). Accessing Information Sharing and Information Quality in Supply Chain Management. Decision Support Systems, 42(3), 1641-656. DOI: 10.1016/j.dss.2006.02.011.

85) Levis, A. H., & Wagenhals, L. W. (2000). C4ISR architectures: Developing a process for C4ISR architecture design, Syst. Eng., 3(4), 225–247.
86) Longbottom C., & Bigelow S. (2017). Https://searchdatacenter.techtarget.com/definition/infrastructure
87) Long, G., Rosser, B., & Stanley, C. (2003). Gartner 360°: Enterprise Architecture, U.S. Symposium/ IT, 23–27 March, San Diego Convention Center, San Diego, California.
88) Lopez-Nicolas, C., & Merono-Cerdan, A. (2011). Strategic knowledge management, innovation and performance. Information Management, 31(3), 502 –509.
89) Minoli, D. (2008). Enterprise architecture A to Z: frameworks, business process modeling, SOA, and infrastructure technology. CRC Press: Auerbach Publications.
90) Mithas, S., Ramasubbu, N., & Sambamurthy, V. (2011). How Information Management Capability Influences Firm Performance. MIS quarterly, 35(1), 237-256.
91) Montilva, J., Barrios, J., Besembel, I., Montilva, W. (2014). A Business Process Model for IT Management Based on Enterprise Architecture. CLEI ELECTRONIC JOURNAL, 17(2).
92) Morais, R. M., Kazan, S., Pádua, S. D., & Costa, A. L. (2014) .An analysis of BPM lifecycles: from a literature review to a framework proposal. Business Process Management Journal, 20(3), 412-432.
93) Morganwalp, J. M., & Sage, A. P. (2004). Enterprise architecture measures of effectiveness. International Journal of Technology Policy and Management, 4(1).
94) Morgan, R. E. P. (2008). Managing Business Transformation to Deliver Strategic Agility. Strategic Change, 17, 155-168.
95) Niemi, E. (2016). Enterprise Architecture Benefit Realization,Thesis for the degree of Doctor of Philosophy to be presented with due permission for public examination and criticism in Festia Building, Auditorium Pieni Sali 1, at Tampere, University of Technology, on the 18th.
96) Niemi, E., & Pekkola, S. (2016). Enterprise Architecture Benefit Realization: Review of the Models
97) and a Case Study of a Public Organization. The DATA BASE for Advances in Information Systems, 47(3), 55-80. https://doi.org/10.1145/2980783.2980787
98) Overby, E., Bharadwaj, A. S., & Sambamurthy, V. (2006). Enterprise Agility and the Enabling Role of Information Technology. European Journal of Information Systems, 15(2), 120-131.
99) Pulkkinen, M. (2006). Systemic management of architectural decisions in enterprise architecture planning. Four dimensions and three abstraction levels. In Sprague, R.H.Jr. (Ed.), Proceedings of the 39th Annual Hawaii International Conference on System Sciences. Los Alamitos, CA: IEEE Computer Society.
100) Queiroz, M., Tallon P., Sharma, R., & Coltman, T. (2017). The role of IT application orchestration capability in improving agility and performance. Journal of Strategic Information Systems, 27(1), 4-21. DOI: 10.1016/j.jsis.2017.10.002
101) Ranjiha, M. E. (2016). A framework for social BPM based on social tagging (Doctoral dissertation). City University London.
102) Roberts, N. (2009). Digitally enhancing customer agility and competitive activity: how firms use information technology to sense and respond to market opportunities in hyper competitive environments, Clemson University.

103) Ravichandran, T. (2018). Exploring the relationships between IT competence, innovation capacity and organizational agility. The Journal of Strategic Information Systems, 27(1), 22-42.

104) Rummler, G. A., & Brache, A. P. J. (2012).Improving Performance: How to Manage the White Space in the Organization Chart, 2nded (1995), 3nded (2012).

105) Saint-Louis, P., & Lapalme, J. (2018). An exploration of the many ways to approach the discipline of enterprise architecture. International Journal of Engineering Business Management, 10, 1–26. DOI: 10.1177/1847979018807383,journals.sagepub.com/home/enb

106) Sarkis, J., Talluri, S., Gunasekaran, A. (2007). A strategic model for agile virtual enterprise partner selection. International Journal of Operations & Production Management 27(11), 1213-1234.

107) Šaša, A., & Krisper, M. (2011). Enterprise architecture patterns for business process support analysis. Journal of Systems and Software, 84(9), 1480-1506. Doi:10.1016/j.jss.2011.02.043

108) Shao, B. M., & Lin, W. T. (2016). Assessing output performance of information technology service industries: productivity, innovation and catch-up. International Journal of Production Economics, 172(1), 43-53.

109) Siminica, M. (2008). THE PERFORMANCES OF INDUSTRIAL FIRMS FROM ROMANIA. CORRELATION DIMENSION INDICATORS OF RESULTS, Theoretical and Applied Economics

110) Singh, S.K., Darwish, T., Costa, A. C., & Anderson, N. (2012). Measuring HRM and organizational performance: concepts, issues, and framework. Management Decision, 50(4), 651-667.

111) Swafford, P.M., Ghosh, S., & Murthy, N. (2008). Achieving supply chain agility through IT integration and flexibility. International Journal of Production Economics, 116, 288–297.

112) Surbhi, S. (2017). Difference between Cost Control and Cost Reduction. Retrieved from https://keydifferences.com/difference-between-cost-control-and-cost-reduction.html

113) Tamm, T., Seddon, P.B., Shanks, G., & Reynolds, P. (2011). How does enterprise architecture add value to organisations? Communications of the Association for Information Systems, 28(1), 141–168.

114) Tallon, P., Queiroz, M., Coltman, T., & Sharma, R. (2019). Information Technology and the Search for Organizational Agility: A Systematic Review with Future Research Possibilities. Journal of Strategic Information Systems, 28(2), 218-237, DOI: 10.1016/j.jsis.2018.12.002

115) The Open Group. (2011). TOGAF® Version 9.1, an Open Group Standard.

116) Tseng, Y. H., & Lin, C. T. (2011). Enhancing Enterprise Agility by Deploying Agile Drivers, Capabilities and Providers. Information Sciences, 181, 3693–3708.

117) Van Zijl, Ch., & Van Belle, J.P. (2014). Organisational Impact of Enterprise Architecture and Business Process Capability in South African Organisations. International Journal of Trade, Economics and Finance, 5(5).

118) Van der, D., & Van zee, M. (2015). Insights from a study on decision making in enterprise architecture, CEUR workshap peroceeding, 1497, 21-30.
119) Wertman, C. (2000). History and Background of C4I-to-Simulation Interoperability, C4ISR Track Invited Speaker Presentation, 2000 Spring Simulation Interoperability Workshop.
120) Yamamoto, S., Olayan, N. I., & Morisaki, S. (2018). Another Look at Enterprise Architecture Framework. Journal of Business Theory and Practice, 6(2). www.scholink.org/ojs/index.php/jbtp
121) Youssuf, Y. Y., Gunasekaran, A., Adeleye, E.O., Sivayoganathan, K. (2005). Agile supply chain capabilities: Determinants of competitive objectives. European journal of operational research, Elsevier.
122) Zachman, J. A. (1987). A Framework for Information Systems Architecture. IBM Systems Journal, 26(3), 276-292. https://doi.org/10.1147/sj.263.0276
123) Zandi, F., & Tavana, M. (2012). A fuzzy group multi-criteria enterprise architecture framework selection model. Expert Systems with Applications, 39(1), 1065-1073.