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The Effect of Electronic Banking on the Performance of Supply Chain Management of Small Businesses

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Abstract

In current age, e-commerce does not just imply online buying and selling, but implies an efficient business throughout business levels, in which supply chain management can be regarded as the major pillar. The aim of this survey is to study effect of use of electronic banking services and important instruments of e-banking on performance and dimensions of supply chain performance at the first level of the SCOR model in electronics businesses. The present study is an applied research type in terms of aim, which is categorized as descriptive correlation in terms of data collection. The statistical population consists of electric supplies stores in Bushehr, of which 107 stores were selected as sample group using simple random sampling method. The questionnaire

has been used as data collection instrument, that its validity has been confirmed through face and content validity through Cronbach's alpha. To analyze data, structural equation modeling using software Lisrel was used. Findings of the present study indicate that the use of e-banking services has a significant effect on performance of supply chain management. Further, among all devices of e-banking services except for POS (Point of Sale) and mobile banking, rest of the devices have a significant effect on performance of supply chain management.

Keywords: **E-banking; Supply Chain; Supply Chain Management; Small Businesses; Bushehr**

INTRODUCTION

Effect of growth of information and communication technologies and their arrival to the organizational systems on development of economic strategies causes development in traditional approach at business and market. In this regard, increasing development of e-banking has provided a suitable infrastructure to facilities making economic and commercial communications especially at modern business models [1]. The main purpose in development of e-payment systems is sending electronic payments to receive electronic goods or adhering to deliver physical commodities. For this, the main focus in on design of e-payment systems in the process of supply and delivery of good through Internet portals.

In recent 20 years, companies have spent huge costs to improve the methods to distribute goods and services, especially factories have carried their early goods from long distance and distributed their products at points of sale throughout the world. Currently, complicated supply chain systems especially the systems which are based on electronic supply chain management pave the way for the big companies for payment management. E-banking is the most important technology which provides the area for e-payment in supply chain management in Iran [2]. Information and communication technology especially the services provided in e-banking system have causes big changes in the process of supply chain. The term "e-business" is used to describe planning in supply chain by means of internet, modern communication tools and payments and online systems. This technology paves the way to integrate and implement information operations within various businesses from wholesale to computer stores. This integration paves the way for the company for a more accurate and flexible control and prediction of demand, and optimal allocation of asset together with improving quality, providing services and responding the customers with awareness from loyal customers' treatment [3].

To date, with regard to the studies relating to the supply chain management, changes in consumer preferences, global trade liberalization, internet, e-commerce, the increasing

tendency towards outsourcing and even environmental issues have been entered into discussion. In other words, competitive global marketplace and change in customers' needs have caused the organizations address evaluation and investigation of effect of various factors on performance of supply chain and its improvement [4]. Despite influence of e-commerce and its instruments especially e-banking system in supply chain system at small and big businesses throughout the world and importance of this technology as a logic for payment within supply chain, it can witness that various businesses especially start-up businesses in current community adjust themselves with this technology with a negligible speed and insist on use of their own traditional method. One of the most important reasons for this negative habit can be lack of practitioners' information on effect of these technologies on performance of their supply chain or lack of risk in acceptance and use of these technologies at their businesses. Hence, the present study aims to give a response to this question "whether use of e-banking services within supply chains at small businesses affects supply chain performance management at these business units?".

The present paper aims to investigate place and effect of e-banking technology on effectiveness and efficiency of supply chain performance management by investigating the structure and features of supply chain. The main purpose of the present study is to investigate effect of use of services provided in e-banking system on supply chain performance management at small businesses. Furthermore, the present paper aims to propose some suggestions to various businesses to let them to use more e-banking services for the purpose of achieving their major aim and providing services with high quality and building sense of loyalty and satisfaction in customers.

OVERVIEW ON LITERATURE REVIEW

There is no gap within organizations. Any organization including big companies, small business, and public or private companies seek to meet customers and stakeholders' expectations and needs, thus they require materials, equipment, facilities from other organizations, whereby the performance of an organization is influenced by means of activities of other organizations which develop supply chain. Efficiency and effectiveness of any organization relies on management performance and supply chain structure. The secret in survival of modern organizations relies on understanding customers' need and rapid responsiveness to these needs. To achieve supply chain competitiveness, providing services for customers is a leading factor. Nowadays, competition between companies has replaced with competition between supply chains [5]. A capability which is required to achieve supply chain competitiveness is investigation of supply chain performance and effect of various innovations and its components on supply chain performance. The present research seeks to investigate effect of one of the most effective technologies in current age within the arena of banking industry and economy (e-banking) on supply chain management performance at small businesses.

E-banking

Indeed, it can say that e-banking is one of big achievements in e-business. With increasing development of e-business throughout the world and with regard to the need to rapid, simple and accurate banking operations to transfer financial resources, e-banking plays a major role in e-business. It should be noted that it requires representing a certain definition for e-banking and factors affecting it in order to understand e-banking. In this regard, e-banking implies paving the way for customers' access to banking services through secure mediators or direct supply of services and banking operations for customers through interactive electronic communication channels [6]. Indeed, e-banking implies optimal integration of all activities of a bank through using modern information technologies concerning banking process [7]. E-banking supplies all banking services via online systems and meets customers' needs without any need for physical presence at bank. E-banking provides the services such as account information and inquiry to it, transfers or transfer funds between accounts, deposits, currency conversion and paying bills for utilities for the customer in a list. E-banking is followed by many advantages such as increasing the number of customers and reducing cost at banking transactions, in this way banks can supply their services with more efficiency and lower costs and consider increasing market share and focusing on new distribution channels [8]. Today, banks using e-banking can give information to the customers regarding their needs, and cause increasing loyalty and reducing costs, and also can provide new opportunities to supply suitable good and services for customers [9]. The most important e-banking services which are provided throughout the world include information about customer accounts, transfer funds between accounts, buying and selling stocks, buying and selling currencies, credit services and create a safe path for the relationship between banks and customers [10]. E-banking encompasses the systems which enable customers to use banking services at three levels information, communication and transaction [11]. A variety of services are used in e-banking, which include (Figure 1):

- **ATM machine:** ATM machine can act as a branch of bank and fulfills most of major banking tasks during which a large portion of transactions will be fulfilled with the least intervention by manpower. Statistics indicate that installation of ATM machine has had a growth for about 45%, such that it can say that the banks throughout the world have invested on ATM machine in the communication age. Status of implementation of ATM machines within leading countries concerning e-banking indicates that an ATM machine has been considered per 750 individuals [12].

- **Point of sale:** point of sale implies e-transfer of funds at point of sale through which the customer at any place and time transfers the fund from his account to the bank using various forms of secure identity identification.

- **Internet bank:** use of internet as communication channel for providing banking services is called internet banking. These services include a series of old services including transfer of fund and a series of new services including supply of electronic statements. Using internet will be followed by benefits for banks and customers. The first and important factor in use of e-banking includes better access to services, better prices and higher privacy [13].

- **Telephone-banking:** telephone-banking is called to a business transaction between bank and customers through telephone. The methods used in telephone-banking include Voice Response, Voice Recognition and Programmable Telephone.

- **5-mobile bank:** development in e-banking has started since the 1980s using mobile phones. development in e-banking together with expansion of wireless networks and mobile phones and the capability for connecting mobile phones to internet has caused the customers have an access to their accounts at bank from any point and develop a new phenomenon "e-banking".
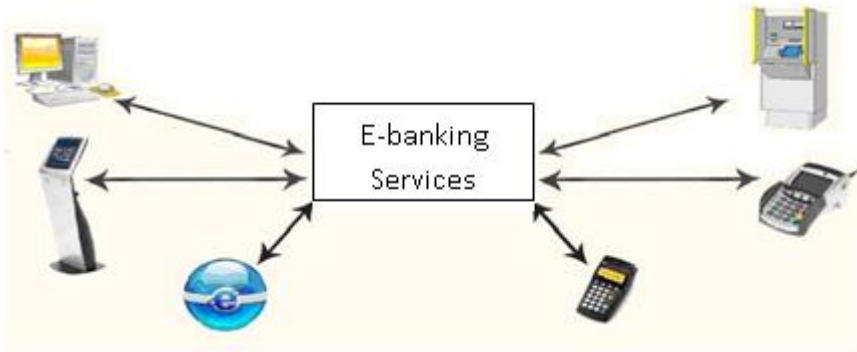

Figure 1: Various types of services provided in e-banking system.

Supply Chain Management

A variety of definitions for supply chain management have been represented in the supply chain literature review, that some are as follows:

A supply chain encompasses all facilities, tasks and activities that suppliers and customers involve in it in production and delivery of a good or service, and it also encompasses planning and supply and demand management, material procurement, production and scheduling of product or service, storage, inventory control, distribution, delivery and customer service [14]. Supply chain management organizes all these activities in order that it paves the way for the customers to acquire products with high quality and reliable services at minimum cost, suitable time, place, amount and conditions. Supply chain management can pave the way for the company to exploit from competitive advantage [15].

Supply chain refers to the functions that associate the supply chain of materials and distribution of final products to each other. Companies involved in supply chain are connected to each other at different stages of this process through supply and demand relations. Companies involved in a supply chain can optimize the flow of goods by exchange of information and coordination of their activities from the supplier to the consumer, reduce their costs and react to the changes at demand [16]. Supply chain encompasses all the activities associated to the flow of goods from the stage of raw materials to the final consumer and information flows associated to them. Supply chain management implies integration of these activities through improvement of supply chain relations to achieve a sustainable competitive advantage [15].

Supply Chain Operation Reference (SCOR)

Before starting a process of improvement, having a clear image and a thorough recognition from the existing supply chain structure as well as the current method, fulfillment of all activities and approaches associated to supply chain is required. After the recognition phase, there will be the need for an in-depth analysis of all activities and operations of supply chain. Hence, there will be the need for a strong instrument so as to support the phase of recognition and evaluation of supply chain. For this purpose, supply chain operation reference model can be a worthwhile instrument. This model is the first model which can be used to develop a supply chain based on business strategy [16]. This model has been included of business process reengineering approaches, benchmarking and performance measurement in an integrative framework, proposing an improved state for this model by specifying the existing status of each process, and setting operating aims for each process concerning performance measurements [17]. This model defines numerous standards for the supply chain performance including general indicators and in-depth operating indicators. Fundamental indicators which measure and describe general performance of chain are considered as the key indicators of performance. These indicators due to hierarchical nature of SCOR model generally encompass more operating indicators and standards [18]. The aforementioned model grants support to performance measures which are used together with five performance features: reliability, responsiveness, flexibility, and cost and asset management. Definitions for each of these measures have been represented in Table 1. This model has used a common language to facilitate the relationship between managers and design supply chain to achieve a favorable performance [19].

Small and Medium Businesses

Small and medium businesses are conveyed as the factors affecting economic development process of countries. Small and medium business at various countries around the world are defined based on various standards including employment size , capital size, production size, turnover rate, type of technology and export of productions. Small and medium businesses are divided into four groups concerning employment size, which can be seen in Table 2.

Table 1: Dimensions of supply chain performance based on SCOR model.

Dimensions	Definitions	Items
Reliability	Supply chain performance is in delivery of the right product, at the right time , to the right place , and in a good condition and package, in a good size and amount, with proper documentation and the appropriate client	·One hundred percent delivery of order ·Delivery performance to customer on time ·Accuracy in documentation ·Product delivery with perfect condition
Responsiveness	Quick delivery of products to customers in the supply chain	· Sourcing cycle time · Manufacturing cycle time · Delivery cycle time
Agility	Agility of supply chain in reaction to the changes at market to acquire or maintain a competitive advantage	· Supply Chain Flexibility · Supply Chain Adaptability
Cost	Costs related to the supply chain operations	· Direct and indirect costs of the supply chain · Distribution and selling expenses of products
Asset management	The effectiveness of an organization in management of its property and assets to support responsiveness to demand which includes all types of assets including fixed and working assets	· Cash to cash cycle time · Back Supply Chain Fixed Assets · Back capital accounts Supply Chain

Small and medium businesses in most of developed countries receive support from states due to various reasons, of which it can refer to the necessary abilities for acquisition of existing capitals in the community and conductance of them in manufacturing and industrial activities. According to what aforementioned above, representing some approaches to facilitate active presence of small and medium businesses within economic cycle of country can lead to development and evolution of these organizations [20].

Table 2: classification of small and medium businesses.

Various types of organizations	Number of employees
Micro enterprises	01-Apr
Very small organizations	May-15
Small organizations	20-99
Medium Organizations	100-500

Conceptual Model of Research

Overview of literature review in the context of e-banking instruments and data collection of the latest technologies of e-banking system in Iran including Bushehr indicated that e-banking instruments which are used in this city include ATMs, POS, mobile banking, phone banking and Internet banking. With regard to literature review of supply chain operation reference (SCOR) proposed by supply chain association, supply chain performance has been developed from five dimensions including cost, responsiveness, reliability, asset management and agility. Conceptual model of this research concerning literature review is proposed as follow in Figure 2.
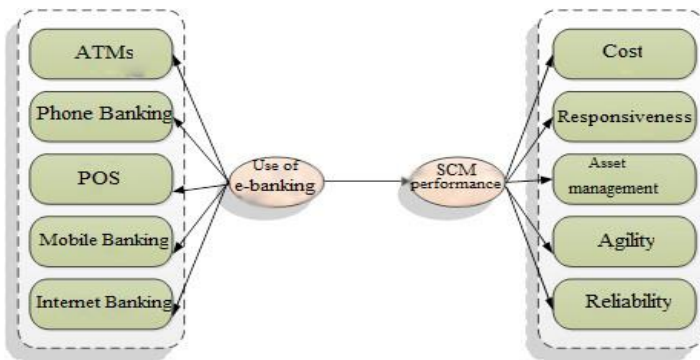

Figure 2: Conceptual model of research

Hence, with regard to the literature review in the context of research subject, it can propose the hypotheses as follows, that the details and arguments associated to them have been proposed in the literature review.

Primary Hypothesis

- The level of use of e-banking affects supply chain management performance at small businesses within city of Bushehr

Secondary Hypotheses

- The level of use of e-banking affects reliability of supply chain at small businesses within city of Bushehr
- The level of use of e-banking affects responsiveness of supply chain at small businesses within city of Bushehr
- The level of use of e-banking affects agility of supply chain at small businesses within city of Bushehr
- The level of use of e-banking affects cost of supply chain at small businesses within city of Bushehr
- The level of use of e-banking affects asset management of supply chain at small businesses within city of Bushehr

RESEARCH METHODOLOGY

Research can be defined as an organized attempt to investigate a special problem which requires a solution, including the steps which are designed and considered to acquire the responses for the problem which is in favor of us at work environment. The present study is an applied research type in terms of aim, which is categorized as descriptive correlation in terms of data collection. The present study investigates effect of quality of e-banking services on the level of use of e-banking and its effect on supply chain management performance within electric supplies stores in Bushehr.

The statistical population consists of electric supplies stores in Bushehr, of which 107 stores were selected as sample group using simple random sampling method. The sample size (110) has been determined using Cochrane formula from finite population at confidence level (95%) and error level (5%).

In this study, two groups of latent and patent variables have been used. Latent variables refer to the variables which cannot be directly observed or measured. Patent variables refer to those variables which are used to defy the latent variables. In this study, two latent variables entitled "the level of use of e-banking" and "supply chain management performance" have been used. Five patent variables include ATMs, POS, mobile banking, phone banking and internet banking which are associated to the latent variable of the level of use of e-banking; further, five patent variables include cost, responsiveness, asset management, agility and reliability which are associate to the latent variable of supply chain management performance. Further, the latent variable "supply chain management performance" and its dimensions are considered as dependant variables and the latent variable "the level of use of e-banking" and its dimensions are considered as independent variables.

The questionnaire has been used data collection instrument. This questionnaire, in addition to demographic questions, develops from 50 questions to evaluate the variables. 24 questions have been considered to measure the variable "use of e-banking" designed by the researcher and 26 questions taken from SCOR model, have

been considered as the questions to measure the supply chain management performance. To measure the variables, five-point Likret scale ranging from very low to very high has been used. To conduct this research, 110 questionnaires were distributed among electric supplies stores within city of Bushehr.

Validity of questionnaire was examined through face and content validity. For this purpose, the questionnaires were given to several professors and owners of electric supplies stores within city of Bushehr, and thereby the content validity was examined and necessary changes were applied. To measure reliability of questionnaire, Cronbach's alpha method has been used. As seen in Table 3, Cronbach's alpha coefficient for all the research variables goes beyond 70%, thus it can conclude that the designed questionnaire enjoys the required reliability.

Table 3: Reliability of research variables by means of Cronbach's alpha.

Latent variables	Patent variables	No of questions	Cronbach's alpha coefficient
The level of use of e-banking	POS	4	0/86
	ATMs	4	0/76
	phone banking	4	0/89
	mobile banking	4	0/90
	internet banking	8	0/96
Sum		24	0/87
Supply chain management performance	Cost	5	0/87
	Responsiveness	5	0/80
	Asset management	6	0/82
	Agility	4	0/89
	Reliability	6	0/84
Sum		24	0/84

In this study, to examine and test the conceptual model proposed by the research, structural equation modeling and software Lisrel have been used. Structural equation modeling gives the researcher assistance to test and examine the theoretical model which has been developed from various components.

ANALYSIS OF DATA AND FINDINGS

After collecting data using the questionnaire, the data were classified and analyzed using suitable statistical techniques which are relevant with the research method, type of variables and so forth, and finally the research hypotheses were tested. In this research, 110 questionnaires were distributed among statistical population and then

were evaluated, that the results of demographic results are as follows in Table 4.

Table 4: Demographic characteristics of respondents.

Demographic variable	Levels	Frequency percent
Gender	Male	%87/7
	Female	%12/3
Education status	Diploma and under diploma	%40/9
	Associate degree	%23/8
	Bachelor degree	%28/1
	Master degree	%7/2
Age	Under 35 years old	%23/3
	35-45 years old	%47/9
	Elder than 45 years old	%28/8
Work experience	Under 10 years	%21/9
	10-20 years	%59/2
	Above 20 years	%18/9

Here, we attempt to investigate effect of the level of use of e-banking services on performance and dimensions of supply chain in small and medium businesses, using structural equation modeling. Diagrams 2 and 3 indicate research models in the state of estimation of significance coefficients; all the research variables are transformed to two latent and patent classifications. Patent variables are measured in a direct way by the researcher, yet the latent variables are not measured in a direct way, but they are inferred based on the relations and correlations between measured variables (Figures 3 and 4).
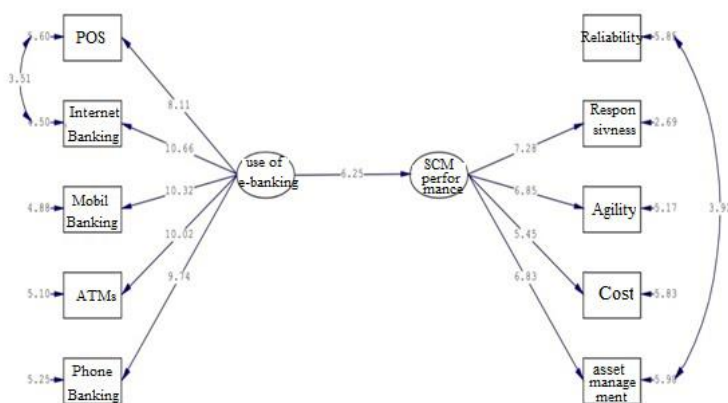
Goodness of fit Statistics:

ChiSquare=58.06,   df=29, (χ²/df=2.002),   RMSEA=0.084, GFI=0.91,   CFI=0.94,   NFI=0.92, NNFI=0.96, IFI=0.94, RFI=0.91

|t|>1.96 is Significant at P<0.05, |t|>2.58 is Significant at P<0.01,

Figure 3: The model representing use of e-banking services in supply chain management concerning significance coefficients (t-value).
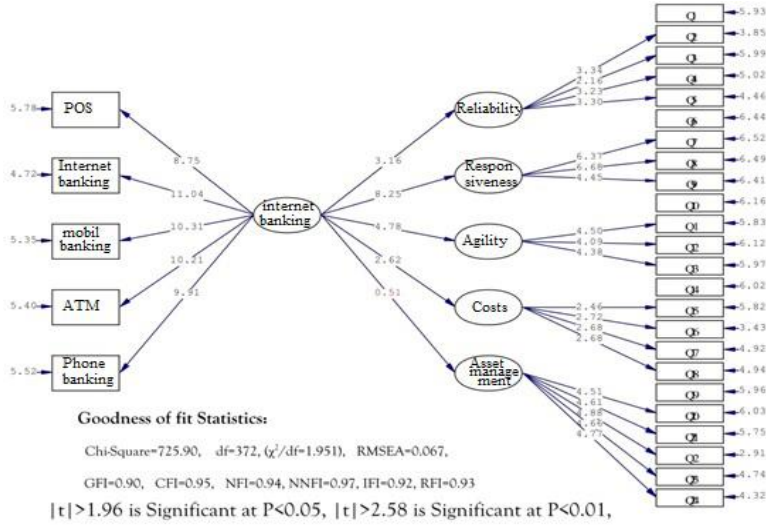

Figure 4: The model representing effect of use of e-banking services on dimensions of supply chain management concerning significance coefficients (t-value).

Table 5 represents that the conceptual model of research enjoys a suitable status for fitness and determination, that all the indicators of fitness of model indicate fitness of model with patent data, and thereby it can say that the conceptual model of research is significant.

Table 5: Indicators of fitness of model.

Index	Primary model	Secondary model	Allowed limit
Chi-Square with degrees of freedom	2/002	1/951	Under 3
Goodness of Fit Index (GFI)	0/91	0/90	Above 0/9
Root Mean Square Error of Approximation (RMSEA)	0/084	0/067	Under 0/09
CFI	0/94	0/95	Above 0/9
Normed Fit Index (NFI)	0/92	0/94	Above 0/9

No Normed Fit Index (NNFI)	0/96	0/97	Above 0/9

According to structural equation modeling and extraction of standard coefficients and significance, now it can investigate research hypotheses. Table 6 represents results of standard coefficients and significance coefficients of testing research hypotheses.

Table 6: results of research hypotheses.

No of hypothesis	Research hypotheses	Standard coefficient (β)	t-value	Results of hypotheses
Primary	e-banking → supply chain management	0/77	3/16**	Confirmed
First hypothesis	e-banking → reliability	0/94	8/25**	Confirmed
Second hypothesis	e-banking→ responsiveness	0/91	4/78**	Confirmed
Third hypothesis	e-banking → agility	0/81	2/62**	Confirmed
Fourth hypothesis	e-banking → costs	0/37	0/51	Confirmed
Fifth hypothesis	e-banking → asset management	0/77	3/16**	Rejected

**significance at 99% confidence level * significance at 95% confidence level

According to Table 6, research hypotheses' testing indicates that e-banking affects supply chain management performance at small businesses and its all dimensions except for asset management within Bushehr. Hence, the more e-banking services increase, supply chain performance and its dimensions will increases, and the more e-banking services decrease, supply chain performance and its dimensions will decrease.

CONCLUSION AND SUGGESTIONS

The present paper has aimed to investigate effect of use of e-banking on supply chain management and its dimensions at small businesses within city of Bushehr. The major hypothesis has been proposed in this way that the level of use of e-banking affects supply chain management performance at small businesses within city of Bushehr. In other words, level of use of services provided in e-banking system and virtual facilities which this system provides for its customers affect fulfillment of payment operations in supply chain, having a positive effect on supply chain management performance and its dimensions. According to the results from research, the variable "e-banking" has a significant effect on supply chain performance at confidence level (99%). With regard to

positive path coefficient, it can say that there is a positive direct relationship between these two variables. Hence, it can conclude that the more level of use of e-banking services and its facilities and use of this technology increase in the supply chain, supply chain management performance will also increase, and the more level of use of e-banking services and use of this technology decrease in supply chain, supply chain management performance will also decrease. Findings of this research indicate that e-banking has had the highest effect on supply chain management and its dimensions including responsiveness, agility, costs and reliability, but it has had no effect on asset management.

The results of this research indicate that the more level of use of e-banking services and its instruments in fulfillment of various payment operations from the early stage of supply chain to later increases, the supply chain management performance and its associated components will also increase. As the results of research indicate, applying e-banking services in an effective way especially at the current age which plays a major role in success of an organization will be also effective in success of business. Findings of this research are relevant with the results of other studies by Wever [21], Tsenga et al. [22], Sadeghi and Hanzaee [23], Kima et al. [24] and Jabbour [25]. In this regard, given the results of this research, the suggestions as follows are represented:

- Supply chain management performance is a big concern at small and big businesses at current age. As a result, most of organizations seek to use any modern approach which has a positive effect on supply chain management performance. With regard to the results from this research, it is suggested to the small businesses to develop the preparations for more use of e-banking services (ATMs, POS, mobile banking, phone banking and internet banking), and to develop necessary infrastructures to implement e-banking system within payment management in the supply chain.
- Among e-banking instruments, point of sale is one of the instruments in e-banking system which has reduced customers' banking queues, because the customers will no longer carry their money and stand in long banking queues, but they can use point of sale for their purchase without any need to refer to the bank. Thus, firstly it is suggested to the banks to improve quality of software and hardware of this system within city of Bushehr so as to welcome various business units for acceptance of point of sale in their daily transactions, and then it is suggested to the small businesses to provide the possibility for paying the good's price or concurrent purchase of services by setting up point of sale within their business enterprises which are not in need of huge costs and time, whereby the components of responsiveness, agility, costs, asset management and reliability improve.

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