

Influential Factors on Strategic Purchasing of Healthcare Services in Iranian Social Security Organization- Indirect Healthcare Sector

P.Raeissi^{1*}, A.Nasiripour² and Kh.Karimi³

- 1- Associate professor, Department of Health Services Management, School of Management and Medical Information Science, Tehran University of Medical Sciences, Tehran , Iran
- 2- Associate Professor, Department of Health Services Management, Science and Researches Branch, Islamic Azad University, Tehran, Iran
- 3- Ph.D in Health Services Management of Islamic Azad University, Science and Researches Branch, Islamic Azad University, Tehran, Iran

Corresponding author Email : raeissi2009@yahoo.com

ABSTRACT: The Goal of the present study was to determine the influential factors on strategic purchasing of healthcare services by of Iranian Social Security Organization (ISSO) as the largest purchaser of healthcare services in Iran. In order to achieve the above goal the literature was reviewed to explore the relevant theories and models, as well as the important factors for the strategic purchasing in healthcare services. In this review however the main focus was put on the experiences gained by countries such as England, Germany, Portugal, Estonia, Australia and New Zealand. After reviewing the theories, models, and the available statistics in this area, a questionnaire was developed to seek the view point of the Iranian Social Security Organization's key managers, and personnel about the important influential factors on strategic purchasing of health care services in indirect healthcare system of ISSO. The questions were measure using a 5 point Likert scale (where 5= totally agree, and 1= totally disagree). An exploratory and a confirmatory factor analysis were used to analyze the data. The findings indicated that nine variables such as 1- purchasing priority, 2- allocating resources, 3- payment mechanism , 4- organization structure, 5- price, 6- contract, 7- providers, 8- service utilizers, and 9- purchasing strategy were effective in strategic purchasing of healthcares services from investigated subjects' point of view. These variables, however clustered themselves around two factors in exploratory factor analysis, and explained 62.9 % of the total variance of strategic purchasing of healthcare services or were explained by two underlying traits in confirmatory factor analysis. These traits were called procedures and contextual factor. "Procedures" factor reflects the approach or pattern by which the ISSO chooses to purchase healthcare services for the insured individuals, and it showed to have three elements - variables 1-3 stated in above. "Contextual" factor is viewed as the context in which the purchasing occurs in, and it contains five variables such as variable 4- 9 stated in above. General conclusion is that for strategic purchasing of healthcare services at least nine different factors play an important role and needs to be taken under consideration by the ISSO.

Keywords: Strategic Purchasing, Healthcare Services, insurance, Social Security Organization, Iran.

INTRODUCTION

Strategic purchasing of health services is defined as a continuous search for finding the best approach through decision making about what to be purchased, from whom these should be purchased and how to pay for them so that maximizes health system performance (World Health Organization, 2000). Efficient strategic purchasing may be introduced as an important and key part of health systems that in its ideal form, would lead to increase of efficiency, effectiveness and responding. Furthermore, strategic purchasing has a major role in achieving the health

purposes in the public sector and broader social purposes, proportioned to the type of care system of extant health in a society (Robinson et al, 2005). Strategic purchasing is applied as a tool for promotion of the performance of health sector and other economic sectors. The experiences resulted from applying these tools in the developed countries have been operated successfully (Preker *et al*, 2007).

Considering the applied reviews, health care context is very diverse. Fearing from pain, disability and death is distinct from the fear of living without TV, computer etc. Considering the distinction between purchasing health services and purchasing goods and services in other context, the importance of strategic purchasing of health services considering the asymmetry of information between the patient and providers of health services is noticeable (Stiglitz, 1989). Asymmetry of information between the patient and physician cause some problems to occur for decision making of patient and emerging induce demand.

The successful experience of countries such as Sweden, Spain, Italy and England signifies that strategic purchasing (from inactive purchasing to strategic purchasing) of health services leads to the increase of performance and defocusing of resources allocating and gradation of health services quality (Buss, 2008). Health services market is encountered ever with in efficient allocation of resources and consequently various problems. One of the major causes of such inefficiency is asymmetry of information between the users and providers of healthcare services. Existing asymmetry of information hints on the disability of users in understanding which care is necessary for their treatment and what service is appropriate for them (O'Neill, Largey, 1998).

In Iran, Social Security Organization as is the second largest provider and biggest purchaser of healthcare services, which helps this organization to capture a major portion of the domestic health market. In this organization provides its help to insured members through two approaches 1- Direct, and indirect approach that are called direct, and indirect healthcare system in this research. The definitions of these two approaches are presented in below:

Direct Healthcare System:

In this approach medical care and medicines are provided directly to covered patients through medical facilities belonging to the Social Security Organization.

Indirect Healthcare System:

In this approach medical services are provided through public and private hospitals and clinics, as well as through university hospitals and contracted-out physicians Poustindouz(Web 1).

Currently, 45% of the entire healthcare services' financial resources of the ISSO is spent on provision of healthcare services to insured members using a direct approach and the remaining 55% on provision of healthcare services via an indirect approach.

Considering the above statistics, and the amount money which ISSO annually invest on purchasing of healthcare services through indirect health care system we understand why implementation of strategic purchasing , and practicing a sound integrated management of healthcare services purchasing is a vital need for ISSO (Iranian Ministry of Health Reports - Statistical Indicators of Deputy of Health, 2007).

The objective of the present study was to improve the performance of the ISSO on purchasing healthcare services in the "indirect healthcare system", through identifying the influential factors on strategic purchasing .The finding of this study not only helps the ISSO to control the costs of healthcare services in this organization, but to offer packages of healthcare services with desirable quality to the insured people.

Brief History of Iranian Social Security Organization (ISSO):

Iranian Social Security Organization (ISSO) is a social insurer organization in Iran which provides coverage of wage-earners and salaried workers as well as voluntary coverage of self-employed persons. In 1975, the Social Security Law was approved and the SSO was established (Web 2).

Current laws:

1975 (social security) and 1986 (self-employed insurance), implemented in 1987. Cash and medical benefits are provided to employed persons in urban areas and old age, disability, or survivor pensioners. Seasonal workers are covered for medical services during the working season. Voluntary coverage for self-employed persons under some determined conditions. The ISSO uses two different healthcare systems to provide healthcare services to the insured individuals- direct, and indirect. In direct healthcare system, the medical care and medicines are provided directly to covered patients through medical facilities belonging to the Iranian Social Security Organization, but in indirect system, the medical services are provided through public and private hospitals and clinics, as well as through university hospitals and contracted-out physicians. The cost of inpatient care and outpatient care varies

among medical care providers, as do the degree of cost sharing and the rate of reimbursement. Same as for the insured person, coverage is provided for a wife and for the first three children younger than age 18 (age 20 if a student, disabled, or an unmarried daughter), for a disabled dependent husband older than age 60, and for aged dependent parents. Voluntary insurance can be taken from the Social Security Organization for the fourth and subsequent children. Medical services are provided directly through 73 hospitals and 270 medical clinics owned by the Social Security Organization.

Services of ISSO can be categorized into groups - Short time and Long time services. Short time benefits services contains: 1- Treatment services, 2-Marriage merits, 3-Funeral ceremony expenses, 4-Pregnancy expenses, and 5-Non – Financial tickets. Long time benefit also covers 1- Dole to unemployed, 2- Major paralysis, 3- Minor paralysis, 4- Death pension for the families of dead person, 5- Retirement's pensions, 6- Family benefits pension (Web 1). Overall, the ISSO is a nongovernmental organization and it is solely financed by contributions (with participation of insured (7%), employer (20-23%) and government (3%))(Web 2-4). Social protection is extended to the self-employed workers, who voluntarily contribute between 12% and 18% of income depending on the protection sought (Web 5).

Literature review”

The idea of strategic purchasing began to emerge in the 1980s, but historically top management tended to view purchasing as having a passive role in the business organization (Ammer, 1989). Just recently an empirical definition of strategic purchasing was developed by Carr and Smeltzer (1997). The applied reviews have deemed the purchasing performance is based on efficiency measures (Reck and Long, 1988). Tactical and operational purchasing have already well-defined by Van Weele (2002).

The literature and texts on purchasing have been reviewed in order to describe the strategic purchasing. These cases have been raised by carter (2003) in Supply Chain Management Journal and has concluded that the strategic purchasing is not a topic that is frequently addressed. Cousins and Sekman(2003) and Chen (2004) confirm the value of having a clear description of strategic purchasing but also conclude that this topic is not addressed often.(Ramsay, 2001) and Mol (2003) focused on strategic purchasing word. (Ramsay, 2001) approaches strategy from the resources based view and examines the contribution that the purchasing function can deliver to sustainable competitive advantage.

The position of purchasing process in health system

Health system has a great role in the countries for supplying the health services required for the people, which are explored in two contexts of objectives and functions. The "function" of health system includes stewardship, creating resources, and financial components which form altogether the delivering services and "objectives" of health system includes responsiveness, fair distribution of financial resources and finally promotion of health level of the society are considered as financial components including (collecting the revenues, pooling and purchasing). (World Health Organization, 2000)

Purchasing: a financing function:

Purchasing process has been considered a financing function in the health systems. The studies conducted in this area indicate its significance. In purchasing process as an financing function, two components are are taken under consideration - financial components and provision of services. Financial component’s elements are revenue collection, fund pooling, and purchasing, and elements of provision are offering personal and group services .In purchasing process, resources generation and stewardship components are also involved (Table 1).

Table 1. a financing function

	Financial components	Revenue collection Fund pooling Purchasing	
Stewardship			Resources generation
	provision	Non-personal health services personal health services	

Purchasing and Strategic purchasing:

Purchasing means “the transfer of pooled resources to service providers on behalf of the population for which resources were pooled” (Kutzin, 2001).

Purchasing is “the process by which pooled funds are paid to providers in order to deliver a specified or unspecified set of health interventions” (WHO, 2000). Strategic purchasing is “when proactive decisions are made

about which services should be purchased, how and from whom” (WHO ,2000). Busse (2004) believes that “1) Purchasing is a central function for improving health systems performance; 2) Where a purchaser model exists, countries should move from passive to strategic forms of purchasing ,and 3) Implicit: From hierarchically integrated to separation of purchaser and provider functions”.

Overall, Strategic purchasing has a vital role in clarifying and illuminating the available information in relation to the purchaser-provider, and literature indicate that asymmetry of information between the patient and physician makes can be a serious problem for decision making about patient and emerging induces-demand. Certainly, designing of health services strategic purchasing pattern would help the healthcare organizations including the Iranian Social Security Organization to utilize their limited financial resources more effectively while purchasing healthcare services for the insured people, and has a good potential to increase efficiency, and quality of such services.

Components of Strategic Purchasing:

In Preker & Langenbrunner (2005) study items such as resources allocation, organizational structure, purchasing utilizers, healthcare providers, price, payment mechanism, priority, purchasing policy, organizational environment are introduced as the components of strategic purchasing.

In Liu *et al.* (2007) study purchasing components are named as input (interventions), reaction (behavior of the providers and purchasers) and the effect of healthcare system performance.

Busse (2008) findings indicated that providers of health services, purchasers and payers, contract, payment mechanism and priorities are the important components of strategic purchasing.

Preker *et al.* (2007) did introduce resources allocation, risk accumulation, resources collection, financial revenues, utilizers of health services, providers (public, private), price (competitive and subsidy) and payment mechanism as the effective components of the strategic purchasing .

In Baeza & Tomez (2004) also variables such as providers, payment mechanism and contract are named as important components of strategic purchasing. In the report of the World Health Organization (2000) the components of health services strategic purchasing are identified to be service utilizers, priorities, resources allocation, responding, payment mechanisms, organizing the purchasers.

From Kutzin & Couffinhall (2005) point of view strategic purchasing components are payment mechanism, contractual framework, health services providers, selective and mass contracts, price, financial structure and ownership of providers. Figures, *et al* (2005) believe that strategic purchasing components are healthcare services providers, contracts, payment mechanism, hierarchic structure, supply of financial resources, regulations and laws, ownership, resources allocation.

MATERIALS AND METHODS

In order to determine the influential factors on strategic purchasing of the healthcare services, and to formulate a conceptual model in this research, the available theories and models as well as the statistics were reviewed in literature. In this review part of the attention was given to the experiences gained by countries such as England, Germany, Portugal, Estonia, Australia and New Zealand on strategic purchasing of healthcare services. The literature review revealed that nine factors play an important role in the strategic purchasing of the healthcare services. These factors were as follows: 1- purchasing priority, 2- allocating resources, 3- payment mechanism , 4- organization structure, 5- price, 6- contract, 7- providers, and 8- customers, and 9- purchasing strategy.

These factors were used to formulate the conceptual strategic purchasing model in this research, and to design a questionnaire survey to evaluate the view point of the Iranian healthcare managers, and experts (i. e. Managers of the indirect healthcare system of the ISSO) about the influential factors on strategic purchasing of healthcare services. A five point Likert scale was used to measure the questions (where 1= totally disagree, and 5= totally agree).

Respondents were Iranian Social Security Organization's managers and experts (i. e. executives of the indirect healthcare system of the Social Security Organization, and general deputies of curative healthcare services, total of 80 persons). An exploratory factor analysis, as well as a confirmatory factor analysis was used to analyze the data. The Lisrel was utilized to do the confirmatory factor analysis in this research.

Validity and reliability of the questionnaire:

For validity of the questionnaire the instrument was sent to five persons whom were experts in the field of strategic purchasing of healthcare services to be evaluated from different angle. After applying their recommendation on the questionnaire the second version of the instrument was prepared, and it was pilot tested

on four hospital financial officers, and two managers whom had experience with purchasing process of healthcare services in the ISSO, but were not part of our sample. Again the respondents' recommendations were taken under consideration to further improve the instrument.

To guarantee the reliability of the instrument, the questionnaire was also test- retested (using one week times elapse) on 10 individuals from the ISSO's hospitals whom were involved with healthcare services purchasing activities within two recent years. The test – retest reliability coefficient for the questionnaire was 0.88.

RESULTS AND DISCUSSION

The findings of the present research revealed that Iranian managers and experts in the ISSO gave a high weight to the variables being covered in the strategic purchasing conceptual model.

That is the average score of nine identified factors were falling within the range of 4.14 to 4.69 on the 5 point Likert scale. This indicates that the managers in the Indirect healthcare sector of the ISSO had a high consensus about effective factors on strategic purchasing of healthcare services .Table (2) represents the mean score of managers opinion , and result of one sample t-test for each variable.

Table 2. Mean Score, Standard Deviation and One Sample t- test for Nine dimensions of Strategic Purchasing

Var	Strategic purchasing dimensions	Mean	SD	t	P
Q1	To what extent do you believe that "structure and organization" can play an effective role in strategic purchasing of healthcare services in the indirect healthcare sector of ISSO?	4.56	0.709	7.1	0.001
Q2	To what extent do you believe that "price" can play an effective role in strategic purchasing of healthcare services in the indirect healthcare sector of ISSO?	4.69	0.722	8.5	0.001
Q3	To what extent do you believe that "resource allocation" can play an effective role in strategic purchasing of healthcare services in the indirect healthcare sector of ISSO?	4.66	0.762	7.8	0.001
Q4	To what extent do you believe that "payment mechanism" can play an effective role in strategic purchasing of healthcare services in the indirect healthcare sector of ISSO?	4.59	0.840	6.3	0.001
Q5	To what extent do you believe that "priority" can play an effective role in strategic purchasing of healthcare services in the indirect healthcare sector of ISSO?	4.60	0.722	7.4	0.001
Q6	To what extent do you believe that "contract" can play an effective role in strategic purchasing of healthcare services in the indirect healthcare sector of ISSO?	4.41	0.650	5.7	0.001
Q7	To what extent do you believe that "providers" can play an effective role in strategic purchasing of healthcare services in the indirect healthcare sector of ISSO?	4.29	0.766	3.4	0.001
Q8	To what extent do you believe that "service utilizers" can play an effective role in strategic purchasing of healthcare services in the indirect healthcare sector of ISSO?	4.14	0.882	1.4	0.167
Q9	To what extent do you believe that "purchasing strategies" factor can play an effective role in strategic purchasing of healthcare services in the indirect healthcare sector of ISSO?	4.38	0.817	4.1	0.001

As the findings in Table (2) indicates the mean score of the specified stated variables is above 4.0, and one sample t-test result is significant for eight of them.

Correlation coefficients between the nine stated variables were varied from 0.212 to 0.703 (Table 3).

Table 3. Correlation Coefficient of Strategic Purchasing Sub- dimensions

Factors	Organization/ Structure	Price	Resources Allocation	Payment Mech.	Priority	Contract	Providers	Customers	Purchasing Strategy
Organization/structure (Q1)	1								
Price(Q2)	0.397**	1							
Resources Qallocation(Q3)	0.520**	0.588**	1						
Payment mech. (Q4)	0.349**	0.703**	0.699**	1					
Priority (Q5)	0.321**	0.510**	0.419**	0.590**	1				
Contract (Q6)	0.369**	0.386**	0.361**	0.336**	0.275*	1			
Providers (Q7)	0.374**	0.439**	0.212**	0.363**	0.325**	0.470**	1		
Customers(Q8)	0.543**	0.525**	0.484**	0.438**	0.445**	0.474**	0.540**	1	
Purchasing strategy (Q9)	0.309**	0.459**	0.389**	0.523**	0.472**	0.420**	0.493**	0.507**	1

** = P<0.01

The findings in Table (3) indicate that the relationships between the investigated variables are significant except for the relationship between the "service providers" and "resources allocation".

The finding of the factor analysis (using Varimax rotation) revealed that two factors can be extracted from the data. The 1st factor explained 51.1%, and 2nd factor 11.8% of the strategic purchasing of healthcare services variance. These two factors together explained 62.9% of total variance of strategic purchasing (Table 4).

Table 4. Eigen value, Variance, Cumulative Variance Of the Extracted Factors

Factor	Eigen value	Variance Explained	Cumulative Variance
1	4.60	51.1	51.1
2	1.06	11.8	62.9

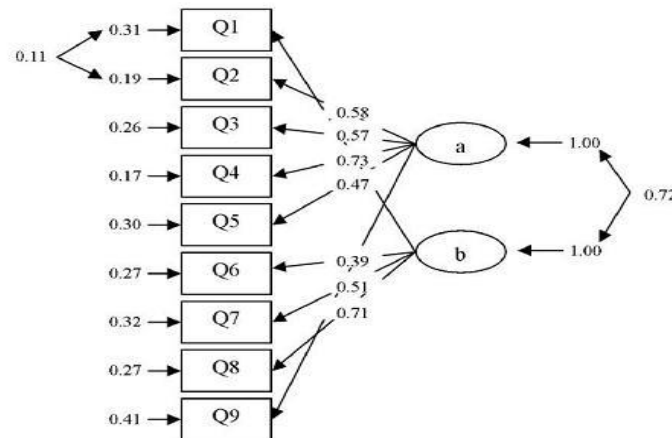
Table (5) represents the loading of the variables on factors 1 and 2 after Varimax rotation.

Table5. Variables' Weights on Factors 1 and 2 after Rotation

Row	Variable	1st Factor	2nd Factor
1	Payment mechanism	0.877	
2	Price	0.819	
3	Resources allocation	0.757	
4	Priorities	0.687	
5	Purchasing strategy	0.439	
6	Providers		0.831
7	Contract		0.744
8	Customers		0.711
9	Structure/organization		0.524

The findings in Table (5) indicate that the highest variable loading on factor 1 is belonging to "payment Mechanism", and on factor 2, is belong to "Providers". Factor 1 was called "procedures", and factor 2 "contextual". These findings indicate that extracted mathematical model in fact contains two general dimensions one is "procedures" aspect, and the other is "contextual" aspect of strategic purchasing. Procedures dimension includes 5 sub- dimensions (i.e. purchasing priorities, resources allocation, payment mechanism, price and strategy of purchasing), and contextual dimension includes 4 sub- dimensions (i. e. Organization, providers, Service utilizers, and contract). The contract is conducted between providers and service utilizers by the organization.

In order to determine the correlation coefficient between the extracted factors, as well as the correlation between the factors, and their sub- dimensions SEM¹ technique was applied. Figure (1) represents the correlation coefficient between the two underlying traits, and each variable with these traits. The underlying traits were called "procedures" (i.e. a), and "contextual" (i.e. b) traits. Procedures trait is defined by Payment mechanism, Price, Resources allocation, Priorities, and Purchasing Strategy, and the amount of beta coefficients are vary from 0.39 to 0.73. Contextual trait is defined by Providers, Contract, Service Utilizers, and Organization /structure. Figure (1) shows the direction of the paths, and their correlation coefficients.



Chi- Square = 30.62, df = 25, P-value = 0.20188, RMSEA = 0.053

Figure 1. Strategic purchasing model including general dimensions

Table (6) represents the path coefficients of the variables in the model.

Table 6. The Amount of Path Confidents, t - Value, and Variance being Explained by Each Variable in the Purchasing Model

Variables	b	t	SE	R ²
Payment mechanism (procedures Trait)	0.58	8.19	0.19	0.64**
Price(procedures Trait)	0.57	7.51	0.26	0.55**
Resources allocation(procedures Trait)	0.73	9.35	0.17	0.76**
Priorities(procedures Trait)	0.47	6.26	0.30	0.43**
Purchasing Strategy- (procedures Trait)	0.51	5.83	0.41	0.38**
Providers(Contextual Trait)	0.52	6.17	0.32	0.45**
Contract(Contextual Trait)	0.39	5.35	0.32	0.36**
Service Utilizers(Contextual Trait)	0.71	7.80	0.27	0.65**
Organization(Contextual Trait)	0.45	5.76	0.31	0.39**

*P<0.05, **P<0.01

The findings revealed that (Chi-square / df) index is 1.31 which is an indication of a good fit between the model, and the data. The magnitude of comparative fit index (CFI) and goodness of fit index (GFI) were both above 0.9. The balanced goodness of fit (AGFI) was 0.86, and RMSEA, 0.05. Overall these findings indicated that the model has a reasonable fit with the data, and strategic purchasing of healthcare services has a two-dimensional structure, and with nine sub-dimensions.

Discussion

The findings of present study indicated that the opinion of the managers and experts in the indirect healthcare sector of the Iranian Social Security Organization about contributing factors to strategic purchasing is compatible with the ones in literature. That is they believe that organization, price, resources allocation, payment mechanism, priorities, contract, providers, and service utilizers, are the key contributing factors to strategic purchasing of healthcare services, and two underlying traits (i. e. procedures, and contextual) are explaining the strategic purchasing model.

"Procedures" trait is represented by five sub-dimensions such as purchasing priorities, resources allocation, payment mechanism, price and purchasing strategy." Contextual" trait represents the context in which purchasing process is happening in, and it is represented by organization, providers, Service utilizers, and contract. Within such context, contract is performed by the organization between the providers and service utilizers.

The results of the confirmatory factor analysis (SEM) revealed that there is a good fit between the data, and the model, and strategic purchasing has a two-dimensional structure. The findings of Preker & Langenbrunner (2005) supports the results of the present study. In this research resources allocation, organizational structure, purchasing utilizers, health services providers, price, payment mechanism, priority, purchasing policy, organizational environment have been identified as components of the strategic purchasing.

In Liu *et al.* (2007) study purchasing components are introduced as input (interventions), reaction (behavior of the providers and purchasers) and the effect of healthcare system performance. In the present study, in the interventions area, components such as purchasers (utilizers), contracts and their related variables (i. e. all types of services, contracts formats, contracts durations), providers of healthcare services and payment mechanism were identified. In the area of "behavior" of service purchasers and providers, market, services rule and regulations and efficiency were identified. In the "output" area, accessibility level, justice, quality and efficiency were identified.

The findings of the present study revealed that factors such as purchasers (utilizers), providers, contract, and payment mechanism were identified to be some of the important elements of strategic purchasing of healthcare services. These findings support the Buss (2008) findings which indicated that providers of health services, purchasers and payers, contract, payment mechanism and priorities are the important components of strategic purchasing. In Preker *et al.* (2007) study the strategic purchasing components are introduced to be resources allocation, risk accumulation, resources collection, financial revenues, utilizers of health services, providers (public, private), price (competitive and subsidy) and payment mechanism . These findings also supports the findings of the present research.

In Hughes (2007) study public and private providers, structure and financial ownership, quality and efficiency variables of offered services are similar to the results of the present research regarding the components of providers, and financial ownership structure and quality and efficiency variables (contract variables).

Baeza & Tomez (2004) introduced variables such as providers, payment mechanism and contract as important components of strategic purchasing. The findings of the present study are compatible with their findings in this area as well.

In the report of the World Health Organization (2000) the components of health services strategic purchasing are identified to be service utilizers, priorities, resources allocation, responding, payment mechanisms, organizing the purchasers that confirm the results of the present research.

From Kutzin & Couffinal (2005) point of view strategic purchasing components are payment mechanism, contractual framework, health services providers, selective and mass contracts, price, financial structure and ownership of providers. These findings also support our findings in this research. Figures, et al (2005) believe that strategic purchasing components are healthcare services providers, contracts, payment mechanism, hierarchic structure, supply of financial resources, regulations and laws, ownership, resources allocation. These findings verify the result of the present study as well.

CONCLUSION

Our findings supports a strategic purchasing model with a two- dimensional structure (the so called Procedures, and contextual dimensions), and nine sub-dimensions. Procedures dimension is defined by 5 subdimensions (i.e. Payment mechanism, Price, Resources allocation, Priorities, and Purchasing Strategy) , and contextual dimension is defined by 4 (i.e.Providers, Contract, Service Utilizers, and Structure/ Organization) which has influential role in strategic purchasing of the healthcare services.

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