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Methodology of Existed Approaches of Pricing E-Services of Information based Corporation

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Abstract

Background/Objectives: In this article, it has been discussed on Methodology of existed Approaches of Pricing E-Services of Information based Corporation. **Methods/Statistical Analysis:** Usage of technology for presentation of services makes technology marketing to be calculable in order to be comparable with other services evaluating second type technology based corporations, which introduce their services by using information technology, more and more shows importance of this subject and at the same time watches over nonprofit entity of presented services. **Findings:** Governmental, semi governmental and commercial institutions whose factors must be used in valuation of calculating services for nonprofit institutions. This paper points out definition of existed methods by verifying valuation methods, evaluation methods and pricing methods of information and communication technology and regarding to entity, type of activity and evaluation hypothesis. Confirmation of 3 measured variables and 20 indices for evaluating e-services have been concluded in this research. **Applications/Improvements:** It could be asked that which corporations are target of evaluation of electronic services.

Keywords: Assessment, E-Services, Evaluation, Pricing

1. Introduction

Valuation of e-services couldn't be done by traditional methods. Minus profit and virtual assets are introduced by analyzers as two reasons for e-services' rejection[1]. 17th accounting code of Islamic Republic of Iran states that commercial units, as a reason of finding total price of intangible assets' difficulties, couldn't define equitable price of intangible assets reliably. So real price of intangible assets depended services couldn't be defined. According to this restriction, e-service pricing is limited to utilization of methods which evaluate systems and information technology. Verification shows that most important evaluation factors of information technology are based on effectiveness, satisfaction of employees and customers, safety of goal, satisfactory and quality improvement. Other done researches in this domain valuate information technology in technology based companies. Valuation of information technology based companies' stock and also technology pricing of these companies are done in this paper. Verification of mentioned methods shows some differences in activity type, entity of companies and hypothesis and shows existed deficiencies in researches about valuation of e-services in large and non-profit institutions. Development of e-government shows necessity of price calculation of e-services as accurate as traditional services in order to perform public services equitably. So monetary comparison between monetary values of different dedicated services to citizens is practical.

Performing e-services is intended to be done by Islamic republic of Iran's government. E-services in Iran are divided into two sections, National and Regional, and is being performed in different layers of government's and citizen's communications, government and employees' communication and government and governmental organizations. Most of researches in e-government domain concentrates on building (establishing) e-government and some other ones concentrate on codification of key factors for key government success with this approach[2]. Probable and favorite scenarios for establishing e-government are codified and planed[2].

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But research about e-services' valuating in level of government's and citizens' communicational has not been done.

Moon describes e-government with 4 different accepts. First accept: generating needed infrastructures by (like safe governmental internet) in order to making efficient balance in governmental organizations. Second accept: performing online services. Third accept: establishing needed infrastructures for e-trades and forth accept: digital democracy for transparency of governmental activities. Nowadays many governmental services are being presented by traditional Electronica or hybrid (mixture of traditional and electronica) methods.

Somehow this means establishment of infrastructures for performing services (first accept). This paper verifies different calculating methods for total price of e-services which are in second rank in the mentioned ranking. In the other word it evaluates e-services which are resulted by informational infrastructures.

It must be noticed that technology and soft wares are included in processes and assets that, usually are not reflected in balance sheet of company[1]. So just price of information based services are mentioned in benefit and cost account statement and no other value for it is considered in balance sheet of company. According to common concept, just if a software or computer be regarded as a constant cost[3]. So in financial assessment, information technology's value is always considered equal to official value of its costs, summation of costs of establishment, maintenance and service performance. This causes unreal calculation of governmental e-service prices and in the optimistic cases causes official based prices. This mater would effects financial assessment of technology based corporations badly, which represent governmental e-services and are managed as commercial institutions and also financial statements of contractors, which present governmental services, would be highlighted as virtual costs and would affect social justice and public satisfaction harmfully.

2. Valuation's Intendment

Assessment methods are extensive and include valuating and pricing concepts as is stated in precedent section. Literature review of research show that although three words, evaluation, valuation and pricing are similar in meaning, there are significant differences between them that have caused codification of different literatures. These three words have been divided and graded according to their utilization domain by experts lexically.

Evaluation means defining value of Sth. In kiamanesh idea evaluation is used as functional evaluation. Also pricing and valuation both present a monetary price for a good. These two reasons have caused usage of price and value as synonyms. But it must be considered that the main difference between price and value is in price calculation of a good, although cost factors defines prices. If cost factors, direct and indirect costs like cost of initial materials or salary or …, get composed by favorableness and efficiency, value of goods would be resulted. Value of goods and services are different in different people's ideas. So Damodaran believes that value of an intendment is not stable or similar to another one. Value of a property depends on different factors which could be vary in different times. According to mentioned affaires difference of pricing and valuating could be found out by comparing between official value and market. As Damodaran belives, book value is just an accounting and tax concept, and could be calculated by accumulative depreciation from historical total price Emporetic value is defined as follow. In cash or equal to cash stated value which is exchanged between interested customer and interested seller when there is no obligation for selling or buying and all of related laws are obeyed and each of seller and customer have enough information about related subjects.

3. Methodology of Research

Effective variables in case of valuating e-services in nonprofit institutions and assessment indices of each variable is defined as goal of this research. At first library method for study of literature has been used then Delphi method has been used for verification of indicated variables. Delphi method is so efficient especially for problems which doesn't need analytical technics. For example when data are not sophisticated and are not definite or when real samples doesn't exist or gathering peoples or discussing a problem is difficult Delphi method should be used. Delphi technic relies on unknown controlled responses. Delphi method has been used for verification of indicated variables. Delphi method is significant especially for problems which doesn't need analytical technics. For example when data are not sufficient and are not definite or when real samples doesn't exist or gathering people and discussing the problem is difficult, Delphi method should be used. Delphi method relies on unknown controlled

responses and stochastic group of responses, tries to avoid attendance of important people in groups of discussion or forcing groups to be united.

So using this technic would make a credible group of experts[4]. Statistical universe which is used in present research consists of 15 elites who have Msc, all of them are Phd student, or have Phd certificate in management, system engineering and accounting and are employed in Tehran municipality.

4. Verification of Precedent

Have considered evaluation of technology as scientific, active and communicational process which is discussed in order to illustrate understanding of social and political sights of view by using technology and science and could be used for verification of social accepts and effects of a technology[5]. In Stewart's idea information technology is used extensively for strategic reasons and could improve efficiency of organizations and also could improve monitoring and productivity of internal processes[6]. So it is noticeable that in scientific literature, different methods of technology evaluation are used that Cost Benefit Analyses (CBA), Information Economies (IE), Balance Score Cards (BSC) are most important examples of them. Literature review and past studies proves existence of much discussions and disagreements between experts and researchers, who work in this field of science about different evaluation methods of information technology. Miscellaneous is mostly caused by information technologies' benefits. Benefits of information technology for business enterprises are proved in form of cost decrease, efficiency improvement, increasing speed and current of processes and increase in monitor ability in many researches. Proportional to benefits of information technology different points of view could be expressed to asses it. In one of these sights of view, assessment method of information technology are divided into two parts, quantitative and qualitative, quantitative methods try to calculate monetary value of technology. 5 famous methods among all of these methods are as follow: cost based methods, emporetic based methods, gain based methods, optional deal based methods and Mont Carlo methods. Three first methods are well known as more traditional methods and two other ones are more developed against these methods, in order qualitative methods of information technology's valuating methods exists. Although they don't have development and complication in basis but they can present favorite results and get in use practically[7].

In another ranking quantitative methods have been called as "pricing methods of information technology and are divided in two parts from accept of goal" as follows: 1. Legally technology pricing which could be done according to all or just a part of following reasons: "defining determinant in case of intangible properties right", "defining wealth and income tax", rate defining of judicial quarrels in case of bankrupting", "changing contract's conditions" and etc. 2. Technology pricing with commercial purposes which is done according to all or just a part of these purposes: "technology trade", "patient law giving", "accident and property insurance", "chatter mortgage to bank and other creditors", accounting properties, reflex in financial assessment and financial reports.

In case of legal pricing, legal demands like pricing tax or penalty are intended. These activities usually are done by judicial system's order. In emporetic pricing, defining value and price of technology or rate of using technology's right is defined to sign a commercial treaty and to gather and present commercial information in order to response properties and customers.

Also emporetic pricing could solve:

- Supporting natural plans. For example: judjing about suggested investment technology plans.
- Supporting international reciprocation and events. For example: selling a property, giving patient law and negotiating about a treaty or right law giving or tax rate defining (Modally 1391).

Evaluating information and communication technology in emporetic domain results in 3 different ideas. Firs one is the idea which considers investment in information and communication technology as a problem. Second one is the idea which considers investment in information and communication technology in vain, stated by[8]. These has been subject of other methods for evaluating information technology from accept of initial goal achievement rate of organization that is highlighted as evaluating method of information systems. In Gordana and Balan idea the following items are most important factors for evaluating information systems efficiency:

- Efficiency of management system including: response period, availability, characters of used language, operator's demand detection, faults' correction, security

model for data, documentation methods of system, flexibility and compatibility of system.

- Efficiency of information including: accuracy of outputs, speed of output, reliability of output and formatting outputs.
- Reforming information: output capacity.
- Satisfaction of operators. Including: senior manager contribution, services' payment method, trust ability of operator in system and operator's contribution.
- Personal influence including: operator's prospections from computer based system, commercial effects of computer based system supporting by beneficial support.
- Performing services. Including: technical abilities of staffs in operating computer based goods and services, information technology department's demanded time for achieving goals, process time for changing system's goals, presented support by seller, understanding level of operator from system and performed tuitions.
- Solution for contradictions. Including: intercommunication between computer based systems and other organizations, distribution priority of resources from computer based systems, relationship between operators and employees of computer based systems and organizational position of computer based unit's staff.

As it was shown in researches literature, information technology pricing is one of evaluating methods for information technology. Also related researches mostly do evalution of technology. For example sajedyfar and etc. al. have verified effect of e-services' effect on achieving trust of online customers. They have done their researches in order to find effective factors on trust (emphasizing quality of e-services and understood risk and felt value[9]. Another research have verified elements and characteristics of e-references in advanced libraries all over the world. In this research a list of evaluated elements of e-references' services have been prepared. Then according to this evaluation list, present condition of public libraries of Tehran's governmental universities have been verified from accept of services and traits of e-references[10]. Also in another research quality of general e-services according to equal models, the mentioned researches verified services, has been verified[11]. Table 1 shows a list of researches which are done in valuation context (Table 1).

As could be noticed in Table 1, there are different methods for valuating information technology which could be used for valuating stocks, brand and intangible asset. Damodaran believes that valuating traditional companies is quite different by valuating technology based companies. He also believes that it would be better to use relative valuating model for intangible asset. Figure 1 shows valuating models (Chart-1).

Table 1. Researches which are related to valuation and pricing

No	Researcher	Context
1	Koller et al. 2014[3]	Stock calculation based on accounting methods
2	Yamaguchi, 2014[12]	Invisible data valuation based on data model utilization
3	Kuiper et al., 2011[13]	utilization of information and technology valuation models
4	Costello et al., 2007[14]	Making a mutual model and unrelated to organizational dimensions in order to valuating technology
5	Dong-Hyunet al. 2007[15]	Presenting economical web based models for defining transferable technology values
6	Kraemer et al. 2000[16]	Effect of information technology in production's value chain
7	Brooking,1996[17]	Presentation of technology broker model for valuation of corporations
8	Hanafyzade and Fazelynyaz 2012[18]	Valuating bank's brand according to brand valuating model based on multivariate decision making model
9	Damodaran[19]	Verification by decreasing monetary current and relative current methods
10	Jafary and etc.al 2006[20]	Reviewing intellectual capital measurement models
11	Anvary and Serajy 2005[21]	Verifying the relationship between intellectual capital and stock exchange

Researchers believe that these models are not compatible or recommended, that more conclusion drawing must be done for models, in order to results of models be utilizable for other ones. Also verification of first chart's models, shows some differences among relative valuation models among other models. This difference relates to calculation of intangible properties. One of the researchers believes that: comparing with tangible assets valuating intangible assets like technology, brand and human resources is one of important issues of companies. Verification of Table

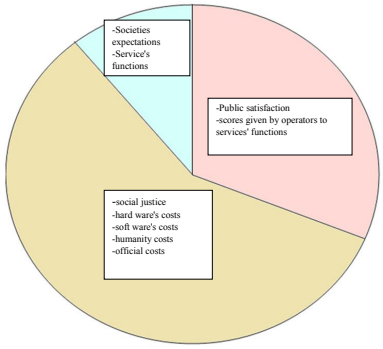

Figure 1. e-services variables and evaluating indices of e-services.

Chart 1. Valuating models reference

Valuating models
Asset's based valuation
Reduction monetary current models
Relative valuation
Probable studies model

one's models shows that: valuating models try to define value and do not try to define services value. According to scientific terms just two types of corporations could be classified as technology based corporation.

- Good producer companies which are related to technology, like hard ware and soft ware.
- Corporations that use technology to deliver their productions or services. Thus Information technology's utilization manner must be considered in defining proper model of technology valuation.

On the other hand a set of restrictions and models are defined to assess technology that could be different with each other, proportional to organization extents, small, medium and large. In addition different entities of corporations prohibits introduced technology evaluation models' and methods' usage every time. For example[22] tried to present a web based model which is not proper for governmental and large corporations but is one of economic models for evaluating mobile technologies, stated by Beak and et al.

As was stated in intendment of valuation section deference of valuation and pricing must be mentioned, for valuating e-services.

According to statements about grading technology based corporations in problem description section. E-services valuation contains three, 2 dimensional variables which are as follow:

- As has been stated, technology based corporations from accept of activity type have been classified in two groups of producer corporations and operator corporations.
- Corporations are classified in two groups of exploitative and nonprofit corporations, from accept of corporations' entity.
- There are two different approach for valuating and pricing of companies in hypothesis. Chart two shows different possibilities which could be resulted from mixing 3 mentioned variables.

Dimension's composition in the above chart: valuating and pricing entity, activity and hypothesis, have caused 8 different states. Verification of hypothesis which have been stated in evaluation, valuation and pricing sections and have been presented in Table 2 shows that in state 8 Chart 2 which is related to the e-services' valuation, presented by nonprofit institutions, has not been verified by researchers. In order to compare different services, presented e-services should be calculated, as monetary value of traditional services has been calculable, caused by increasing information technology's influence in exploitative sector and utilization of technology for presenting services in governmental sector. Also valuating of these services according to nonprofit entity of governmental companies causes better evaluation of services presentation to all social classes equally (Chart-2).

Table 2. Result of Delphi method utilization

Average of Importance	Indices	Variables
30%	Stochastic universe's expectations, Services functions (including: e-payment ports, exchanging chart's Ideas electronics expert, reliable document publication, messenger)	Valuation
60%	Social justice (fair price), hard ware costs (implementations), soft war costs (including costs of supplementation), cost of domain and band's width, software related information	Pricing
10%	Public satisfaction (including: quality of information, presenting services' speed, accuracy of information, sufficiency of services), score of services' functions given by operators	Evaluation

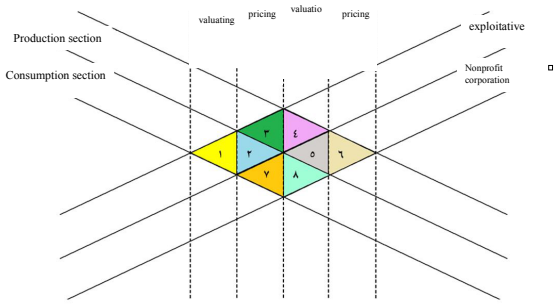

Chart-2: Three dimensional chart of information techologies valuation.

5. Verification and Confliction

Three groups of indices must be noticed for calculating price of e-services. Including activity type, entity and hypothetical context.

- From accept of activity, in technology evaluation of productive company technology would show up as defining product's value. Just a few methods try to calculate monetary technology using complicated mathematical calculations. 5 of most famous methods among these methods are: income based method, cost based method, market based method, Mont Carlo method and willingness deal concept based method. On the other hand efforts done for calculation of e-services in institutions, where technology is used in order to introduce their services, mostly depends on variables used by traditional methods because calculating total price of e-services reliably, is not possible (12^{th} accounting code). Three specialties have been studied in technology based corporations. 1- These corporations have been intercepted since 20 years ago. 2- Not much information could be found from their financial reports. 3- These corporations are pioneers in their own trade kind. So there are some limitations in gain information during their valuating period[1]. Emporetic value of technology and value of presented services must be calculated for calculative value of e-services' value, this subject emphasize on emporetic based traditional approach.
- Large nonprofit corporations, which are responsible of service presentation to citizens, assume that investment in information technology context is unavoidable and are in the same classes as corporations which use technology to deliver their goods. Also they could be symmetrical whit each other proportional to organizations size, small, large or medium. Costello, Sloane and more ton have verified some highlighted model's information and communication technology in small and medium industries, including "Deton and MC lin", "Sedan", "Farbery and etc.al", "Lowy and etc.al", and have derived a general structure which is needed for every organization including large organizations. Their codified structure have been classified in 4 different domains as follow: peoples issues, technology focus, evaluation position, management aspect. Thus according to mentioned researches different sizes of companies must be considered in presented researches. 9 different valuating methods have been defined for informational and communicational systems. Defined methods have been compared with each other from accept of 8 factors. Restricted unity has been found out between these methods. Size and entity of organizations are so effective in codification of a proper method for e-services' valuating, from accept of mutual indices which are pointed out in Costello's and etc. AL's researches about peoples' issues. Two groups of indices must be considered for valuating prices of e-services in theory and proportional to the mentioned affaires. First group consists of valuating indices in which valuation and analytical methodhas been used to define value. Value analyses is an organized system for solving the problem which enable us to define real value of goods and services by gathering proper information and resources[23]. First step of valuation is defining functions. In definition, function is necessary operation of product or service with no manner consideration that is described just by a verb or a none. For example: "payment port" and "Delivery system" are defined functions of soft war systems.
- Importance of customer's satisfaction rate from quality of system's functions and systematic e-services, shows up after function defining. We believe that quality of website presented goods and services are significantly important for valuation. Business must create value in customer'smined when they are utilizing the website in order to creating fruitful experience of website. Faithfulness would be created as a result of value increment and also increment in value and profit would be created as a result of faithfulness.

Second group consists of e-services pricing indices. Total online governmental services' cost usually consists of legal cost of service performance and portal costs. Legal cost of

service performance and portal costs. Legal costs could include tax, dues of services and etc., portal costs includes: distance costs or related discount of short distance and also e-payment processes of costs. These costs usually are paid by banks or other financial institutions[24-26]. A questionnaire has been provided and distributed among elites with Delphi Method in order to verifying mentioned variables and valuating e-services. Accounting, system engineering, management specialties have been used to define members of elite team according to interdisciplinary concept of services valuation. So according to the mentioned affairs, elite team consists of 15 members, 5 member for each speciality.at first the subject has been described for stochastic universe then questionnaire has been distributed among universe's members by Delphi method. After confirming variables, verification indices of each of them have been asked as a question from the stochastic universe's members[27-29]. Eventually members of stochastic universe have been asked to define importance of each option by using Likter 5 options test in order to define importance level of variables and indices. Result of these operations are shown in following Table 2.

according to gathered information from questionnaire which are presented in Table 2, necessity of paying attention to valuating, evaluating and pricing variables has been proved and percentage of each variable's contribution in total price of e-services in orderhave been defined 10%, 40%, 30%. According to Table 2 and describing evaluation, valuation and pricing assessment of variable's indicesgraph1 has been drawn.

6. Conclusion

According to all the models and methods presented for technology valuation. Propagation of technology based corporations and replacement of traditional methods with new technology causeusage of new models and methods proportional to characteristics of corporations. So influence of technology in large and governmental corporations' domain is another factor which shows necessity of technology based service valuation. When large corporations which are responsible of public services use technological manners for service presentations. Three distinction of them comparing with other institutions, causes choosing different methods for their services. Choosing valuation index for services is most important challengein service valuation domain for large governmental institutions. Verification about valuating and pricing methods of e-services shows that differences between e-services in governmental and private sectors must be used in codification of valuating indices. Nonprofit entity of governmental services or size of governmental organizations are most important differences between service presentation in governmental and private sectors. On the other hand accurate literal definition of evaluation, valuation and pricing are so important for codification of valuating service indices. Because concepts of evaluation and public satisfaction (people), valuation and social prospections, pricing and social justice are related.

So paying attention to rate of product's functions usage. Effects of product functions on e-services in large governmental institutions are suggested for valuating e-services in large governmental corporations.

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