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Performance Measurement based on the Created Value Added by using the Balanced Scorecard

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ABSTRACT: There are various methods developed for the performance evaluation. Most of the measurement models employ scoring methods. However, the factory owners and even the top executives are interested in evaluating their performance by more tangible measures such as financial achievements. Scoring measures might be appropriate and applicable measures for the experts but they might not be perceived by the owners of the factories. Value added is the most important index by which the real performance of the organization is represented. The present study developed a unique model for calculating value added based on the characteristics and specifications of the project-based service organizations. The effectiveness of each department in creating value added by the organization is essential, because different departments have various impacts on organization's performance. In doing so, Balanced Scorecard and brainstorm methods are used to determine the role of each department in creating value added.
Key words: Performance Evaluation, Value Added, Balanced Scorecard, Project based Organization

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INTRODUCTION

Different methods are defined in the performance evaluation of the organizations. Examples include Sink and Tatel, performance matrix, model of results and determinants, performance pyramid, BSC, business process, stakeholders' analysis, EFQM, and so on. Most of these models employ scoring methods for the performance evaluation. However, most of the owners and even top executives are interested in using more tangible measures such as the funds. The scoring measures might be proper for the analysts or experts but they might not be understandable for the owners of equity or factory. Value added is one of the most important indexes which represent the real performance of an organization. Value added is the financial advantage gained from the organizational operations of its stakeholders and especially stockholders. Wealth creation is the marginal goal of any organization.

Consequently, performance enhancement means creating more wealth which is divided among the equity owners in terms of dividends or distributed among the employees in terms of the salaries. It also helps in delivering high quality goods or services to the customers and possessing taxes and other revenues for the country. Value added is the additional wealth created by the corporations through production process or service delivery which is computed by deducting the intermediates from the earnings. There are three methods for computing value added including subtraction, credit and addition.

The fixed costs for the labor, annual depreciation and annual earnings do not represent the real organizational performance but it does not seem to calculate the real value added by the traditional methods and this is not a function of the organizational performance. Concentrated on the projects of the organization, a large part of the organizational budget is spent over the work in process projects. Therefore, the value added from the future productivity of the projects should be also added to the organizational value added.

In this mode, value added is computed so that all of the outputs of the organizations such as the current operations and future projects are involved. As a result, the obtained value is a complete reflection of the organizations' performance and the value added is actually computed.

The present paper develops a unique model for calculating value added based on the characteristics and specifications of the project-based service organizations. The effectiveness of each unit on creating value added by the organization is essential because measuring the performance of the organizations' departments and their effectiveness is necessary and different departments have various impacts on the organization. In doing so, BSC and brainstorm methods are used to determine the role of each department in creating value added.

The main indexes of organizations were determined in terms of four dimensions of BSC to specify the contribution of each department in creating value added to the organization. Then some meetings were established by the top executives to determine the responsible departments in developing the

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indexes. Based on the contribution of each department in creating value added, the performance is evaluated.

Research Background: According to the Gartner Group, in 2003 private companies spent over $1.5 billion on performance tracking tools (Edwards and Thomas, 2005) and it emphasizes on the significance of the performance measurement.

In the recent years, different methods have been developed to measure and evaluate the organizational performance. Examples include Sink and Tatel, performance matrix, model of results and determinants, performance pyramid, BSC, business process, stakeholders' analysis, EFQM, and so on.

The strength point of the performance metrics, introduced by Kigan (1989), is that different dimensions of the organizational performance including financial and nonfinancial, and internal and external dimensions are considered in an integrated form. However, this model does not clearly represent the relationship between different dimensions of the organizational performance (Neely et al., 2000).

The framework of results and determinants is one of the models resolving the problem of performance metrics. This framework is based on the assumption that there are two basic performance indexes in any organization. These indexes include the indexes ending with the results and those concentrated on the results. The segregation between these indexes confirms that the results are functions of the previous business and are resulted from the specific determinants. In other words, the results are from the lagging variables while the determinants are the leading variables (Tangen, 2004; Neely et al., 2000).

Another approach is the model of Sink and Tuttle who argued the organizational performance is derived from the complex relationships between seven performance indexes including impact, efficiency, quality, productivity, work life quality, innovation and profitability (Tangen, 2004).The most important and applicable models that are being used are BSC and EFQM.

The EFQM Excellence Model was introduced at the beginning of 1992 as the framework for assessing organizations for the European Quality Award. It is now the most widely used organization all frameworks in Europe and it has become the basis for the majority of national and regional Quality Awards (also Polish Quality Award) (Ho, 1996; Karkoszka and Szewieczek, 2007; Urbaniak, 2004; Dudek-Burlikowska, 2006).

In its simplest form, the EFQM Excellence Model is a 9 box "Cause and Effect" diagram. There are five 'enablers' and four 'results'. The 'enabler' criteria cover what an organization does. The 'results' criteria cover what an organization achieves. To improve the results it achieves, the organization must improve what it does. The 5 enablers are: Leadership; Strategy; People; Partnerships & Resources and Processes, Products & Services. The 4 result areas are: Customer Results; People Results; Society Results and Key Results (Ho, 1996; Karkoszka and Szewieczek, 2007).

In the attempt to solve the problem by supplementing financial measures with additional measures that can help evaluate the long term performance of a firm, Kaplan and Norton introduced the BSC, a performance measurement framework that provides an integrated look at the business performance of a company with a set of measures, which includes both financial and non-financial metrics (Kaplan and Norton, 1996a; Kaplan and Norton, 1996b; Kaplan and Norton, 2000).

The name of BSC is with the intent to keep score of a set of measures that maintain a balance between short- and long-term objectives, between financial and non-financial measures, between lagging and leading indicators, and between internal and external performance perspectives. Of the BSC's four performance perspectives, one is a traditional financial performance group of items, and the other three involve non-financial performance measurement indexes: customer, internal business process, and learning and growth (Niven, 2008; Niven, 2006; Chavan, 2009; Davis and Albrigh, 2004).

MATERIAL AND METHODS

Implementing the proposed model for performance evaluation: In this section, the steps taken to evaluate the performance in a project-based service company is described.

Introducing the organization: The case organization seeks to deliver the consistent and stable electrical power to the consumers through the optimum development of electric utilities. Based on the working mission of the company in terms of supplying and delivering energy, the organization is a government service (selling energy) company and a project based company (establishing and developing the substation and line) or it can be classified as a project-based service company.

Calculating the value added of organization: Value added can be computed in terms of classes (composed of several economic departments with similar operations), groups (composed of several classes), sectors (composed of several groups), parts (composed of several sections) and total economy (composed of total economic parts). There are three different methods for calculating value added:

a) Calculating value added by subtraction method: Under this method, the value added of a firm is calculated by subtracting the sum of the intermediate consumptions applied in the manufacturing process

from the value of its outputs during a financial period. In other words:

Value added= Output Value – The value of intermediate consumption

Any of the components of the above are defined as follows: *Output value:* The output value of a manufacturing firm during a given period is equal to the value of the total goods and services provided by the firm. The output value is calculated by the sum of the following items:

- The value of the main products or services sold.
- The value of the productions or services freely given the employees for their compensation or given by discount.
- The value of the productions or services consumed by the owner or the owners of the firm.
- The value of the productions or services given the other institutes or organizations without receiving any fees.
- The difference between the manufactured goods and goods in process at the beginning and end of the year (changes in the warehouse inventory)

The value of intermediate consumption: This is the sum of the low-durable goods or ephemeral goods or services employed in the production process or service delivery process.

b) *Calculating value added by the addition method:* This is a common method that calculates the value added by distributing it among the manufacturing factors. In this method, the value added is obtained by summing the compensation costs, depreciation costs, tax and operating surplus. When a firm pays indirect tax in addition to the direct tax related to the manufactured product or service, the difference between the indirect costs minus subsides should be added to four elements.

Value added= Depreciation + profit (loss) + labor costs +other distribution costs

c) *Calculating value added by consumption method:* This method is used to estimate the gross domestic products in terms of the type of the marginal production and not in terms of the type of the economic activity of the manufacturer. It requires making independent estimations from the marginal consumptions of the families, government services, non-for-profit services to the families, establishing gross constant capital and import and export.

On a project-based service organization, a major part of the annual budget is spent over the investments for development. The total value added is equal to the sum of the value added resulted from providing services to the customers (actual value added) and estimates for the future operations of the current investments for the development projects (potential value added).

In this method, the actual value added from providing services extracts from the financial statements and is then added to the potential value added resulted from the future operations in under construction projects. To calculate the value added of the under construction projects, the future revenues from their operation during the project life is simulated and the maintenance and repair costs are deducted. Using the formulas of engineering economics, the current value of the project for the base year is calculated.

RESULTS

Calculating potential value added from the future operation of under construction projects by subtraction method: In the project-based service organizations, a large part of the organizational credits are spent over the investments for development so that the organization becomes capable of supplying more services in proportion of the increase in demands. Calculating value added by the common formula and without considering the under construction projects means that a large part of the capital and labor which are not involved in a project, have not been considered in calculating value added. Therefore, the value added from the future operation of the projects should be also calculated to compute the real advantage from the organizational performance.

According to the general formula of value added: Potential value added from the future operation of the under construction projects= outputs-inputs

Outputs or Inputs: Total financial advantages achieved by the future operation of the under construction projects might be classified as the outputs or inputs of the organization. Generally, the line and substation projects seek to reduce the network losses and cut off or the undistributed energy. In other words, the total monetary amount of the network losses and the monetary value of the reduced cut off (undistributed energy) are resulted from the circuit of the project.

Feasibility studies are conducted before implementing new projects and the technical and economic impacts of the project are predicted in this way. Implementing new projects can reduce the network losses which its amount has been computed over the useful life of the plan (30 years). This amount is multiplied by the price of the energy and the monetary amount of loss reduction resulted from the project's circuit.

For instance, the amount of loss reduction of substation A during 30 years is three megawatts. Based on the monetary amount of each kilowatt hour which is

predicted to be 2500 dollars, the monetary amount of reducing losses is equal to: **3*1000*2500*12260=91950000000 Rls**

In reliability studies, the impacts of each project on increasing the reliability of the network and reduction of the unplanned cut offs is measured by DIGSILENT software. This software calculates the impact of each project for a year by the circuit of the project in terms of KWH. Due to the harmful impact of the unplanned cut offs on the subscribers, the monetary amount of the losses to the different industrial or households is defined. Multiplying the loss coefficient by the amount of the undistributed energy, the monetary amount of the undistributed energy is computed for one year.

Value for maney of notdistributed energy per year = amount of notdistributed energy* money factor of loss in every substation: For example, the amount of the undistributed energy from the circuit of substationAis annually 590.543 MWH. According to money factor of losses for each KWH of the undistributed energy for this substation is predicted to be 14000 rials. The value for money of undistributed energy in a year for this substation is equal to: **14000*590543=8267602000 Rls**

As a result, the nominal revenue from 30 years of operation from substation A is equal to: **30*8267602000+91950000000=339978060000 Rls.**

Table1. Calculating the outputs (inputs) of the projects

Project Title /Input	Calculating the monetary amount of the nominal revenues of the projects							
	1	2	3	4	5	6	7	8
Substation A	3	91,950,000,000	590543	14000	8267602000	30	248,028,060,000	339978060000
Substation B	9.01	276,156,500,000	12183	18000	219294000	30	6,578,820,000	282735320000
Substation C	1.3197	40,448,805,000	46032	18000	828576000	30	24,857,280,000	65306085000
Substation D	2.39	73,253,500,000	1141	16000	18256000	30	547,680,000	73801180000
Substation E	0.61	18,696,500,000	0	5000	0	30	-	18696500000
Substation F	3.3	101,145,000,000	656	18000	11808000	30	354,240,000	101499240000
Substation G and its lines	3	91,950,000,000	89389	6000	536334000	30	16,090,020,000	108040020000
Substation H and its lines	3	91,950,000,000	0	6000	0	30	-	91950000000
Substation I	2.46	75,399,000,000	0	16000	0	30	-	75399000000
Substation J	3	91,950,000,000	91396	16000	1462336000	30	43,870,080,000	135820080000

1. Loss reduction in 30 years (MW) 2. Monetary amount of loss reduction during the useful life of the project 3. Undistributed energy in the year (KH) 4.Rial coefficient of loss 5. Rial value of the undistributed energy in a year 6. Project life (Year) 7.Rial amount of the undistributed energy during the project 8. Total inputs of the project during its life

Table2. A summary of the outputs (inputs) of the project (in million rials)

Factor/ Project name	1	2	3	4	5	6	7	8	9	10	11	12
Project input during its life	339978	282735	65306	73801	18696	101499	864320	21608	73560	18390	75399	135820
Annual inputs of the project	11333	9425	2177	2460	623	3383	28811	720	2452	613	2513	4527
Total annual inputs of the project	69037 milionRials											

1. Substation A 2. Substation B 3. Substation C 4. Substation D 5. Substation E 6. Substation F 7. Substation G 8. Line G 9. Substation H 10. Line H 11.Substation I 12. Substation J

Data: Data of each project includes the total costs related to the construction of the projects in addition to the prediction of the operating costs of a project during thirty years. The data related to the construction of the projects are predicted at the beginning of each project and the related information is exploited from the project control plan.

Operating costs include the labor costs (operators) and the annual repair and maintenance costs. Based on the definition of the value added, labor costs do not involve the operator sand the labor of the repair and maintenance; however, the costs of the spare parts and consumables are only considered. To predict the material costs and consumed spare costs of operating the projects, each line or substation project has been simulated to the similar projects.

Table3. Predicting the establishment and operation costs of the projects

Project name	1	2	3	4	5	6	7	8	9	10	11	12
Predicted cost of the project set-up	250000	140000	330000	30000	10000	32628	74988	37000	43000	22000	50000	34000
The cost of the spare parts and consumed materials and annual repairs	169	94	223	203	6	21	50	3	29	2	34	23
Total cost of the spare parts and consumed materials and annual repairs	854 million rials											
Total cost of the project set-up	1323616 Million rials											

1. Substation A 2. Substation B 3. Substation C 4. Substation D 5. Substation E 6. Substation F 7. Substation G 8. Line G 9. Substation H 10. Line H 11.Substation I 12. Substation J

Potential value added of the under construction projects: According to the general formula, the value added of each project is equal to the input (output) of the project minus the set-up costs which is calculated for different line and substation projects as the following table: Projects' Value Added= Inputs (outputs) of the projects – Costs of the Projects. Since the costs and revenues of the projects are related to a thirty year project (useful life of a project), the present value of the average annual value added is calculated from the operating costs of the fifteenth year (average of 30 years) and the rate of return on investment is intended to be 3% for the base year.

i=3%, return on investment, n=30, project's life, C_0 = Set-up costs, C_n = Annual costs of the project, I_n = annual income from the operation of the project, Sv = salvage value of the projects at the end of the year 30,

$$= -\frac{C_0}{n} - \frac{C_n}{(1+i)^{\frac{n}{2}}} + \frac{I}{(1+i)^n} + \frac{Sv/n}{(1+i)^n}$$ The present value of the annual average of the value added **1461**=

$$= -\frac{1323616}{30} - \frac{854}{(1.03)^{15}} + \frac{69037}{(1.03)^{15}} + \frac{(132361/30)}{(1.03)^{30}}$$

The present value of the annual average of the value added is equal to: 1461 million rials.

Calculating the actual value added from providing services by the additive method: Based on this method, the value added is calculated by adding the labor costs, net income, paid taxes and depreciation as follows:

The value added of the services= Labor costs+ Depreciation+ Net Income+ Net Tax+ Distributed Costs; Labor costs: Labor costs or the paid wages and salaries are also called the compensation of the employees and include the total gross cash and non-cash payments under the titles of the salary, compensation, bonus, right of housing and so on. These amounts are paid to the total part-time or full-time employees continuously or non-continuously during one period or one year; Depreciation: It is composed of the costs occurred for the buildings, machinery, furniture, computer and other capital goods or tangible assets of the organization and this cost is recorded in the accounting books; Operating income: Operating income is the difference between total output value and total value of the data during a financial year. Tax: This is paid at the end of the year to the government; Distributed costs: They are calculated by the difference between total costs of the organization and the intermediate consumption costs, tax, depreciation, operating income or loss and labor costs which is generally accompanied by the general and administrative costs.

Table4. Effective items in actual value added

Calculated items in actual value added from the sale and transmission of the energy	In million rials
Employee conmpensation	130000
Consumption of the constant capital	103833
Other distributed costs	24349
Operating profit or loss	-159000
Net tax	0

99182= 24349+،+130000+159000-103833=value added from the sale and transmission of energy

Calculating total value added: The total value added of the Regional Electric Company, as a project-based organization, is equal to the total value added from the transformation or sale of energy (actual value added) and the prediction of the value added resulted from the future operation of the line and substation of under construction projects (potential value added). In other words, the total value added is calculated by the following formula: The total value added = Actual value added of the transformation and sale of energy + potential value added by future operation of the under construction projects.

Table5. Actual, potential and total value added

Title of the value added calculation	In million rials
Potential value added from the operation of the projects	1461
Actual value of the sale and transmission of energy	99182
The total value added	100643

Calculating the value added of the departments and labors by using BSC: Given the different impacts of the organizational departments on the value added, the impact level of each department in creating value added should be calculated. In doing so, BSC and brainstorm methods are used to consider the role of each department in creating value added.

The name of BSC is with the intent to keep score of a set of measures that maintain a balance between short- and long-term objectives, between financial and non-financial measures, between lagging and leading indicators, and between internal and external performance perspectives. Of the BSC's four performance perspectives, one is a traditional financial performance group of items, and the other three involve non-financial performance measurement indexes: customer, internal business process, and learning and growth (Niven, 2008; Niven, 2006; Chavan, 2009; Davis and Albrigh, 2004).

Organizations should specify their goals in terms of four dimensions and select some indexes to evaluate the achievement of these goals. They should also calculate the quantitative value of each dimension of these indexes for the evaluation period. After specifying the goals and quantifying them, the organization should conduct operations and innovate to achieve their goals (Davis and Albrigh, 2004).

The organization should establish various meetings to specify their goals and relative indexes and define and perform the operations of the departments. Any of the four dimensions of BSC is described along with the strategic goals and related indexes.

Financial Dimension: In terms of the financial dimension, the economic consequences of implementing the strategies are measured. In the planning systems prior to the strategic planning and controlling systems, the financial performance might be measured by some indexes such as operating income and return on investment and the value added; while BSC is an approach to measure the performance and the financial performance is measured by similar ratios and indexes.

In the financial dimension, four strategic goals are identified including increasing revenue, managing the attraction of the capital budget, increasing the participation and increasing the financial resources and facility. The definitions are provided.

The strategic goal of increasing revenue: The indexes related to this goal include: Proceeds from the sales: The case company sells electricity to the customers and the sold energy has a monetary value which should be paid during a two month period. Some customers delay in paying their debts. The ratio of the collected proceeds to the total amount of selling energies is examined by this index. Demand supply: The permit to establish the branches for electricity requires applicants to pay tariffs and this is called demand.

The net revenue of the electricity market: The case company supply the required energy from the other companies with similar missions working in the surrounding cities. On the other hand, the excess energy is sold to these companies. Operations in this market earn revenue for this company which is surveyed by the net revenue of the electricity market.

Management of attracting the capital budget: Specific budgets are allocated to the companies and the main part of this budget is spent over the establishment of the equipment's to supply the energy or correct and optimize the worn equipment. The indexes related to this goal include:

Attracting the optimal budget: This index is resulted from the expenses to correct and optimize the worn equipment's to the allocated budget.

Attracting the transfer plan budget: This index is resulted from the expenses to create the electrical equipment to the allocated budget.

Increasing participation: This objective is considered to attract the investors and includes the investment amount through the participation.

Increasing resources and financial facilities: This objective aims to increase the financial resources and the case company seeks to receive loans for achieving this objective.

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Customer and market Dimension: The customers and the market are the elements by which the companies become capable of measuring and improving the main measures for testing the satisfaction, loyalty, maintenance and obtaining new customers. Customer dimension reminds managers whether the customers are satisfied with meeting their needs.

In terms of the customer and market dimension, the case company intends to increase the customer satisfaction and supply the electricity power.

Increasing customer satisfaction

Customer satisfaction index: This index includes the measurement of customers' perceptions about the provided services by the company. The customers' opinions are analyzed by the questionnaires.

Timely supply of electrical energy: Delayed demand: Once the company is not able to provide electrical branching services for the customers, they become dissatisfied and this leads to the creation of the delayed demand. The higher the level of this index, the more appropriate the functioning of the company.

Internal process Dimension: The indexes of this dimension are employed to evaluate the required processes in a company. In this dimension, the company should determine the processes by which it could continue the value creation for the customers. Achieving any of the objectives defined in terms of the customer dimension, some operating processes should be established in an efficient and effective manner. These processes should be developed in terms of the internal processes and appropriate measures should be developed to control their improvement.

Five objectives should be developed in terms of the internal processes including performance improvement of the processes, better utilization of the equipment, betterment of the consumption management, development of the renewable energy and project management.

Performance improvement of the processes: The following indexes are defined for this objective:

Losses: The amount of wasted energy in the electricity transmission networks which is converted into heat and is calculated by the following formula.

$$\frac{\text{delivered energy to the network} - \text{output energy of the network}}{\text{delivered energy to the network}}$$

Not distributed energy Rate: This is the non-supplied energy of a network and is calculated by the following formula:

$$\frac{1000 * \text{Non-supplied energy}}{\text{Non-supplied energy} + \text{supplied energy}}$$

Readiness of the plant: The expressed readiness of the power plant to participate in the electricity power. Readiness of line: This is the capacity of the lines of the electric network.

Readiness of the substation: This is the capacity of the network transformers

Improvement in operation of equipment: This strategic objective is surveyed through the percentage of utilization of the equipment.

Improvement of the consumption management: This objective is investigated by subscribers' load factors.

Developing the renewable energies: This objective is measured by the installed capacity to supply the electrical energy.

Project management: This is examined by measuring the scheduled performance of the projects related to the electrical energy.

Learning and Growth Dimension: Learning and growth objective mainly aims to provide infrastructures and resources for achieving the organizational goals in terms of the other dimensions. Balanced scorecard not only emphasizes on the future investments on the equipment and research and development, but also the organization should invest in its infrastructures including labor, systems, methods and so on to achieve the long-term goals. Empowerment and development of learning, employees' satisfaction and leadership enhancement are considered in learning and growth dimension.

Empowerment of the employees: Capital education: This measure is defined to control the level of the educations in each period to empower the employees.

Increasing the employees' satisfaction: Satisfaction of the employees: This index includes the perceptions of the employees about the organizational performance which is analyzed by a questionnaire about their opinions.

Leadership enhancement: This is examined by measuring the following index: Achievement of the strategy: The level at which the strategic objectives are achieved in the balanced scorecard is evaluated by this measure. The main indexes of the organization are determined in terms of the four priority dimensions of BSC to specify the share of each department in creating organizational value added. Some meetings are established by the top executives to determine the responsible departments of the organization for improving the indexes. Based on the equal weights of the indexes from the point of view of the top executives, the number of the indexes under the responsibility of the departments are divided by the total number of the indexes. By doing so, the participation of each department in enhancing the organizational performance is calculated.

Table6. Indicators of the case organization in terms of BSC dimensions and responsible units

Dimension	Indicators	Responsible department
Financial	Proceeds from the sales	Planning
	Revenue of selling electric energy	Operating
	Attracting repair budget	Operating
	Attracting development budget and providing new equipments	Plan and development
	Loan	Financial and support
Customer and market	Non-supplied demand	Planning
	Subscribers' satisfaction	Planning
Process	Energy losses	Operating
	Not Distributed Energy Rate	Operating
	Readiness of line, substation and plant	Operating
	Improvement in the operation of the equipment	Planning
	Subscribers' load factor	Planning
	Installed capacity to supply energy	Planning
	Project management	Plan and development
Learning and growth	Education capita	Human resource
	Employee's satisfaction	Human resource
	Achievement of strategy	Staff field

Table7. The contribution of each department in the value added and the amount of value added of each one

Department	The contribution of each department in the value added	Value added (million rials)
Operating	29.5	29689
Planning	35	35255
Plan and development	12	12077
Financial and support	6	6038
Human resource	11.5	11574
Staff field	6	6038

After calculating the impact level of each department on creating value added, the amount of the value added is multiplied by the effectiveness percent related to each department in order to calculate the value added of each department. Based on the explanations, department's share in creating value added is calculated.

Having identified the value added of each department, it can be divided by the number of its personnel to achieve the value added of the labor. For example, the value added on the human resource assistant department with 16 personnel is equal to 723. Productivity of the human resource assistant= value added / the number of the employees= $\frac{11574}{16}$.

DISCUSSION

Most of the performance evaluation models employ scoring to evaluate the organization. However, the stockholders and owners of the factories and even top executives are interested in evaluating the organizational performance by tangible measures such as money. Value added is one of the most important indexes representing the real performance of the organization or it is the financial benefit from the organizational activities of the stakeholders and stockholders.

This paper aims to measure the performance of the project-based service organizations and their subsidiaries by using value added as a viable measure for the key stakeholders. Given the constant annual profit and labor cost of these organizations, calculating value added by traditional methods is unreal and is not a function of the organizational performance. In addition, a large part of the budget is spent over the projects and calculating the value added by the conventional formula means that capital and the labors of the company for the projects is not considered in the value added. To completely calculate the real benefit of the organizational performance, the value added from the future operation of the projects should be added to the value added.

In this model, the value added is calculated so that all outputs of the organization are involved. These outputs include the current operations such as future operating investments. As a result, the calculated value is a reflection of the organizational performance.

The main indexes of the organization are determined in terms of four dimensions to determine the share of each department in creating value added. After that, the department responsible for improving each index is determined and the contribution of each department in creating value added is identified. The developed model of this study can be employed to evaluate the performance of the organization and its subsidiary units to be provided to the stakeholders and board members. The main characteristics making the model more effective and efficient are as follows:

- Calculating the real performance of the organization and considering total performed operations in two departments of services and projects.
- Creating a mechanism for determining the efforts and bonuses of the employees based on the outcomes of the value added.
- Determining an indirect mechanism to measure the effectiveness of the projects
- Identifying the balance between the expenses and revenues and the possibility to examine this balance by the organization
- Motivating the employees to participate in and support the projects along with enhancing the efforts of the employees in non-routine affairs.

Converting the values of the services and future values of the projects to the financial value is significant in the model and a logical and acceptable approach should be considered by the organization and stakeholders. Given the employment of BSC in determining the contribution of each department on creating value added, it is necessary to present a logical and acceptable approach for generating value added.

REFERENCES

Davis, S. & Albrigh, T. (2004)."An investigation of the effect of Balanced Scorecard implementation on financial performance". Management Accounting Research, vol. 15, Issu.e2: Pp135-153

Edwards, D. and Thomas, J.C. (2005). “Developing a municipal performance measurement system: reflection on the Atlanta dashboard”, Public Administration Review, Vol. 65 No. 3, pp. 369-76.

Kaplan, R.S., & Norton, D. P. (1996a). Using the balanced scorecard as a strategic management system. Harvard Business Review, 74(1), 75–85.

Kaplan, R. S., & Norton, D.P. (1996b). The balanced scorecard translating strategy into action. Boston: Harvard Business School Press.

Kaplan R.S. & Norton, D. (2000). "The strategy-focused organization: How balanced scorecard companies thrive in thenew business environment", Harvard Business School Press .

Chavan, M. (2009). "The balanced scorecard: a new challenge", Journal of Management Development, Vol. 28 Iss: 5, pp.393 - 406

Dudek-Burlikowska, M. (2006). Quality research methods as a factor of improvement of preproduction sphere, Journal of Achievements in Materials and Manufacturing Engineering 18, 435-438.

Urbaniak, M. (2004). Quality management–theory and practice, Difin, Warsaw (in Polish).

Neely, A.D., Richards, A.H., Mills, J.F., Platts, K.W., Bourne, M.C.S., Gregory ,M. &Kennerley, M. (2000). “Performance Measurement system Design: Developing and testing a process-based Approach”, International Journal of Operations&Production Management., 20, 0: 1119-45.

Niven P.R. (2006)." Balanced scorecard step-by-step: Maximizing performance and maintaining results", 2 Edition, John Wiley&Sons.

Niven P.R. (2008). "Balanced scorecard :Step-by-step for government and nonprofit agencies", Wiley; 2 Edition .

Ho, S.K. (1996). TQM an Integrated Approaching – Implementing Total Quality through Japanese 5S and ISO 9000, Kogan Page, London.

Tangen, S. (2004). “Professional practice performance Measurement: from philosophy to practice.” international Journal of Productivity and performance Management, Vol.53, 8: 726-37.

Karkoszka, T. & Szewieczek, D. (2007). Risk of the processes in the aspect of quality, natural environment and occupational safety, Journal of Achievements in Materials and Manufacturing Engineering 20, 539-542.