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Measurement and Analysis of Productivity Indices by Productive Resources Perspective Based on Practical Viewpoint in Alimentary and Drinkable Products Industry

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ABSTRACT

Nowadays productivity is considered beyond only a criterion and is discussed as a culture and insight in work and life and also its promotion causes in economic development. The foundations of productive activities are in human resources and it is probable to say that productivity promotion is dependent on skillful, capable and motivated humans in any country. The purpose of this study is measurement and analysis of productivity indices by productive resource perspective based on practical viewpoint. Statistical community of this research is composed of all companies which are active in alimentary and drinkable products industry from 2006 to 2012 in Tehran Stock Exchange Market. The type of this research is correlation and dependent variables are profit capitation and sale capitation. Also work force, asset productivity and productivity of first materials are independent variables.The results of research show that there is signification relationship between productivity of work force indices and practical indices (profit and sale capitation) and also between productive index of asset productivity and profit capitation. On the other hand here is not significant relationship between productivity of first materials indices and practical indices (profit and sale capitation) and also between productive index of asset and sale capitation.

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INTRODUCTION

Nowadays all countries are going to achieve some advancements in productivity in a way that they will able to reach more national production by less consumption of resources because there is a direct relationship between income capitation of each country and productivity index. The efforts to promote productivity are aimed to promote community's life. Collectively, productivity is a concept to show the ratio of external status to internal status of an individual, a group or an organization (Zhang *et al*, 2014). In regard to this issue that productivity can be studied based on two viewpoints, any of these viewpoints are composed of cases that play a significant role in productivity which is in fact efficiency and effectiveness (Burtless, 2014). It should be noted that increased productivity causes promotion in level of life and social welfare by real income, national competition and quality of life (Erik *et al*, 2011). By optimized usage of entities (data) and production of suitable and more products, it is possible to increase incomes and it results in more production and success in competitive world. Also this success results in business advancement and better quality of life. The aforementioned procedure is not achieved unless we apply a correct insight to productivity and its promotion (Kitaeva, 2002).

In this study, the researcher asses the relationship between indices of productivity by productive and practical perspective and also evaluates the effects of productive indices on efficiency and effectiveness of companies accepted in Tehran Stock Exchange Market. The word of "productivity" in research discussion is defined as efficiency, output, capability and efficient fruitfulness (Zhang *et al*, 2014). Sometimes, productivity concept, like other scientific words and concepts, is treated with interpretations and thoughts such as concepts, is treated with interpretations and thoughts such as profitability, coast reductions, production enhancement, competitiveness, enhancement of human force output and etc. Productivity is an evaluation of an institute's distribution and production process; for instances, one's goods quality and produced services and used resources or else (Alaghi, 2012). Kawan defines productivity as, "the measureable relation between the proportion of

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products and the proportion of used factors (resources) needed for making the product" (Kawn,1969). The reduction productivity shows that we should pay attention to more analysis and promotion of our performance. The profit of companies is dependent on productivity in a long period of time (Naok, 2011).

To the researcher this definition is more closed to productivity: productivity is defined as favorite, effective and optimized use of capacities, facilities, assists, resources and opportunities. On the other hand, productivity is effective and optimized use of time and the value of asset, life, thought, reflection and capacities in a time unit and favorite use of all elements. Other researchers provide more expansive and more reflexive explanation about productivity concept like work and more efforts, product and more services, less wastes, reduction of costs and in sum a criterion to evaluate efficiency (Tangen, 2003). Although efficiency and productivity generally relate costs to external status (products), results and assessment of them create more complete picture of effectiveness and productivity (Garnero *et al*, 2014). Productivity is defined in many times in relation to manifestation of purposes and organizational programs, explanation of employees' job duties, the level of stress, statistics of abandonment and organizational commitment. Productivity in a long period of time guarantees profitability of companies. So a company should emphasize on productivity and cost improvement in a two-dimensional way as much as possible (Heggedal *et al*, 2014). Johnson and banker (1994) by using the airline industry process as their experimental function got a result that there is an extreme positive correlation between profitability and productivity. Kitaeva (2002) in a research called, "relationship between productivity measures and financial information in the airline industry" studied 35 airlines in 25 countries in a period of 1991 to 1999. He also received a result that there is a negative correlation between operating expenses and efficiency measures.

2. Methodology:

2.1. Research method:

Research method is correlational by nature and concept. This research is done in comparative-inductive framework. It means that theoretical principles and research history are used to accept or reject hypotheses inductively by library studies and investigation of sites and articles comparatively and data collection.

2.2. Research hypotheses:

The research hypotheses are as following:

1) There is a significant relationship between production index (work force productivity) and practical index (profit capitation).
2) There is a significant relationship between production index (asset productivity) and practical index (profit capitation).
3) There is a significant relationship between production index (productivity of first materials) and practical index (profit capitation).
4) There is a significant relationship between production index (work force productivity) and practical index (sale capitation).
5) There is a significant relationship between production index (asset productivity) and practical index (sale capitation).
6) There is a significant relationship between production index (productivity of first materials) and practical index (sale capitation).

2.3. Statistical community:

In this, statistical community is composed of all companies which are active in alimentary and drinkable industry and also in Tehran Stock Exchange Market from 2006 to 2012. The number of this community is twenty five with riddling method (Table 1).

Table 1: Statistical community of research.

The number of accepted companies in alimentary and drinkable industry	51
The number of companies which abandon stock market in considered period of time.	(15)
The number of companies which abandon statistical community because of negative additional value.	(11)
Research statistical community	25

2.4. Data collection method:

Part of the research which has been designed for providing theoretical basics was conducted through library method, i.e. books, articles and theses. Another part that is related to the variables has been extracted through field method, i.e. CDs and information software of Tehran stock exchange. The companies' financial statements were the source of collecting necessary information. The collected data was modified and classified by Excel software and the final analysis was conducted by SPSS 19 software.

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2.5. Research variables:

Table 2: Status of research variables.

variables	The name of variable	Calculation method
Practical indices (Dependent)	Profit capitation	Operational profit of company of "t" year / number of all employees of "t" year
	Sale capitation	Net sale of company at "t" year / the number of all employees
Production indices (Independent)	Productivity of workforce	***** The whole additional value of company at "t" period / the number of all employees at "t" year.
	Asset productivity	***** The whole of additional value of company at "t" period / stable properties of company at "t" year.
	Productivity of first materials	***** The whole of additional value of company at "t" period / consumed first materials in company at "t" year.

***** VAT = The net profit after tax discount + amortization costs + tax + costs of work force.

2.6. Statistical method:

To test the hypotheses, descriptive statistics firstly deal with central limit indicators (average, Mean, skewness, standard deviation and so on), then they are examined and interpreted through inferential statistics including regression significance test, normality test, autocorrelation test, Pearson correlation test.

3. Results:

3.1. Descriptive Test:

Table 3: descriptive statistics.

Variable	Index	Number	Mean	Std. Deviation	Middle	Skewness	Kurtosis
Independent Variables	Productivity of workforce	125	173.91	172.102	123.00	2.509	7.335
	Asset productivity	125	0.718	0.7197	0.530	3.289	16.035
	Productivity of first materials	125	2.2187	2.57709	1.2700	2.533	7.734
Dependent Variables	Profit capitation	125	156.36	193.809	90.00	2.381	5.782
	Sale capitation	125	1199.90	1304.894	772.00	2.584	7.766

3.2. The results of the research first hypothesis test:

Table 4: One–variable regression (profit capitation logarithm and work force productivity logarithm).

Coefficients [a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.482	0.392	-	1.230	0.221
Work force productivity logarithm	0.843	0.081	0.686	10.464	0.000*
a. Dependent Variable: profit capitation logarithm					

In regard to the results of first hypothesis test (table 4), the range of resulted probability is 0.000 and is less than 0.05, so this hypothesis is accepted. On the other hand, estimated range of standard coefficient is 0.686 and positive, which shows a direct and strong correlation between these two variables.

3.3. The results of the research second hypothesis test:

Table 5: One –variable regression (profit capitation logarithm and asset productivity logarithm).

Coefficients [a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	4.677	0.120	-	38.919	0.000*
Asset productivity logarithm	0.216	0.095	0.201	2.273	0.025*
a. Dependent Variable: profit capitation logarithm					

In regard to results of second hypothesis test (table 5), the range of resulted probability is 0.025 and less than 0.05, so this hypothesis is acceptable. On the other hand, estimated range of standard coefficient is 0.201 and positive, so this shows a direct and semi-strong correlation between two variables.

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3.4. The results of the research third hypothesis test:

Table 6: One-variable regression (profit capitation logarithm and productivity of first materials logarithm).

Coefficients [a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	4.531	0.102	-	44.619	0.000*
Productivity of first materials logarithm	-0.057	0.090	-0.056	-0.627	0.532
a. Dependent Variable: profit capitation logarithm					

In regard to results of third hypothesis test (table 6), the range of resulted probability is 0.352 and more than 0.05 so this hypothesis is rejected. On the other hand, estimated range of standard coefficient is 0.056 and negative which shows a reversed and very weak correlation between these two variables.

3.5. The results of the research fourth hypothesis test:

Table 7: One – variable regression (sale capitation logarithm and work force productivity logarithm).

Coefficients [a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.960	0.295	-	10.027	0.000*
Work force productivity logarithm	0.774	0.061	0.755	12.760	0.000*
a. Dependent Variable: profit capitation logarithm					

In regard to the results of forth hypothesis test (Table 7), the range of resulted probability is 0.000 and less than 0.05 so this hypothesis is acceptable. On the other hand estimated range of standard coefficient is 0.755 and positive which shows a direct and very strong correlation between the two variables.

3.6. The results of the research fifth hypothesis test:

Table 8: One – variable Regression (sale capitation logarithm and asset productivity logarithm).

Coefficients [a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	6.690	0.102	-	65.398	0.000*
Asset productivity logarithm	0.037	0.081	0.042	0.463	0.644
a. Dependent Variable: profit capitation logarithm					

In regard to the results of fifth hypothesis test (table 8), the range of resulted probability is 0.644 and more than 0.05, so this hypothesis is rejected. On the other hand, estimated range of standard coefficient is 0.042 and positive which shows a direct and very weak correlation between these variables.

3.7. The results of the research sixth hypothesis test:

Table 9: One – variable regression (sale capitation logarithm and productivity of first materials logarithm).

Coefficients [a]					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	6.652	0.085		78.454	0.000*
productivity of first materials logarithm	0.038	0.076	0.046	0.506	0.614
a. Dependent Variable: profit capitation logarithm					

In regard to the results of Sixth hypotheses test (Table 9), the range of resulted probability is 0.614and more than 0.05 so this hypothesis is rejected. On the other hand, estimated range of standard coefficient is 0.046 and positive which shows a direct and very weak correlation between the two variables.

4. Discussion and Conclusion:

The research findings indicate that there is a significant relation between index of labor productivity and performance index (per capita dividends and sales) and also between indexes of capital productivity and per capita dividends. On the other side, there is no significant relation between productivity index of raw materials inventory and performance index (per capita dividends and sales) and also production of capital index and per capita sale; therefore, regarding the research result, the best and most related definition of productivity is one

that emphasizes on manpower productivity and stating that productivity is disclosure of goals and institutional plans, description of the staffs' duties, stress level, desertion level and organizational commitment. Considering that organizational managers should try to improve and enhance the productivity level of their manpower in order to increase the productivity and efficiency with the help of recognizing abilities and skills of staffs and suitable utilization from human potential capacity which is one of the most essential sources of each organization.

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