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LABOR PRODUCTIVITY AND ITS FACTOR ANALYSIS

NARANCHIMEG.L[1], BAYARMAA.B[2]
[1]Professor, Accounting department, Business School of National University of Mongolia
[2]Doctorant

Abstract
Productivity growth plays a prominent role in the economic and social development of any country. Productivity is an indicator showing how many goods and services are to be produced for the assigned cost. Productivity is improved by managing and organizing business operations effectively, employing scarce resources efficiently and by producing quality products and services that meet market demand and needs. As productivity growth develops, the competitiveness of the country or business entity rises, social wealth is increased and income levels and living standards of the citizens are improved. The experiences of highly developed countries show that productivity plays a role in the leverage of economic growth and developments not only at the country level, but at the level of business entities or even on households and individuals. Thus an accurate estimation of labor resources of the organization by added value needs to be conducted and the resources analyzed by assessing utilization efficiency and influencing factors of labor productivity.

Objectives Productivity growth is considered the main factor for the sustainable economic and social development of any country. Productivity describes the broad themes of resource utilization and output ratio, or shows how many goods and services to be produced for the assigned cost. As productivity growth translates as an essential factor of measuring competitiveness not only of the state, but also business entities, its estimation formula and sustainability methodology have been analyzed in the case of Mongolia.

Research method Compare and analyze: Annual GDP, Workforce and Periodic productivity growth by economic sector observed from Statistical Annual Report of Mongolia 2015-2019. The traditional method of estimating the impact of economic analysis factors was used.

Summary The latest 5–year Statistical report indicates that labor productivity growth has continuously been higher than GDP and economic growth that has been supported by raw minerals market price rise in the mining sector. Moreover, it has been evident that the growth of the manufacturing sector has slowed down in the last 5 quarters, and there has been a continuous decrease in industries such as food. Considering the state economic conditions there have been efforts to provide guidance for possible options to maintain productivity growth which will be less than input growth percentage at the macro level; however, expected results have not been seen yet.

Conclusion and Recommendation To estimate productivity indicators by labor, and limited resource usage ratio, and to maintain a sufficient growth ratio that improves productivity effectiveness of business entities, the following methodology is recommended: The influencing

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factors on labor productivity growth needs to be considered as a whole, and to estimate the performance growth of labor productivity instead of total sales of products and services, the production cost the workforce spent in the accounting period would be appropriate factors.

Keywords: Labor productivity, total productivity, the main factor productivity, added value, productivity for per employee

Productivity growth plays a prominent role in economic and social developments of any country. Productivity is an indicator that shows how many goods and services to be produced on the unit cost. Moreover, Productivity is the ability of a business entity to utilize its available resources in order to produce profitable goods or services as desired by customers or clients. It is the productivity that measures the performance of an organization, and it can also be used for companies themselves in order to assess their own progress. Productivities considered as the economic efficiency indicator that represents the levels of all kinds of inputs utilization, spent on production and processes. As being the main economic indicator efficiency is revealed through productivity. Productivity is improved when output is increased in its peak by lowering the resources to be put in production of goods and services. Productivity growth affects positively on livelihood of citizens and on inflation as well. The hearths of economic growth existence are considered asset accumulation, skills of the employees and technological developments. The influencing factor of these essentials is seen as Total Factor Productivity (TFP). The latest practice of developed countries shows that the countries heavily invest into processing industries and service sectors manufacture products with high technology that were produced, based on the knowledge and the products with high additional value. Moreover, workforces tend to shift to those industry sectors. As a result, development level of the country is determined by the productivity and competitiveness. A leading economist Samuelson P. explains the reason of underdevelopment of countries as the lower level of productivity. Moreover, he concluded that low level of productivity decreases total income and accumulated amount, as well as limits the likelihood of investing capitals and developing industries with modern technologies. As result it leads to low levels of productivity. Productivity is determined by the total outputs, created through the manufacturing and by the inputs, spent on the production process.

$$\text{Productivity} = \frac{\text{outputs}}{\text{inputs}} (1)$$

Output indicators: - Production amounts, - Added value, -Total income, -Total net income. Input indicates costs to indicators spent on the production process.

In the theory and practice of productivity, labor productivities determined by labor cost, labor spending and total workforce. Leading research organizations and scholars give the general explanation of the term as: “Labor productivity measures the amount of goods and services produced by one hour of labor[1]”, “Labor productivity is a measure of economic growth within a country.[2]”

[1] https:/www.bls.gov/lpc//

[2] https:/www.investopedia.com/terms/labor-productivity.asp

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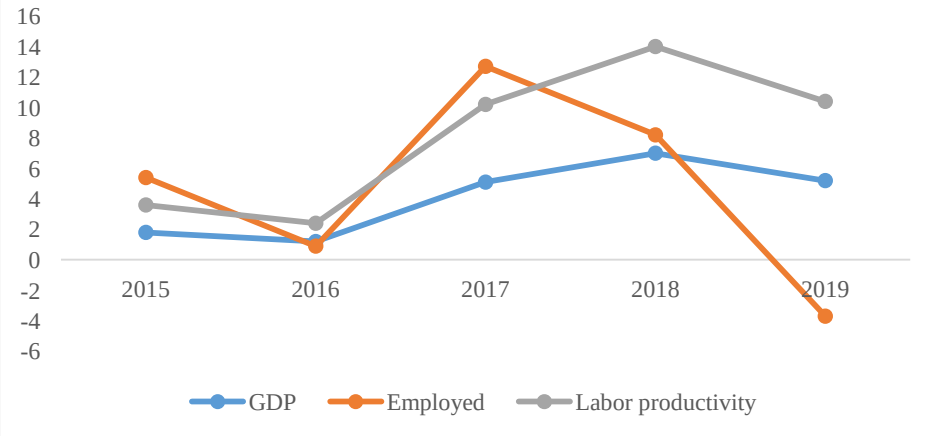
The subject matter of productivities defined considering 2 aspects:

1. Productivity is seen as the tool, in other words, it is defined as one of the indicators of economics or a tendency to identify it from narrow definition
2. Productivity is defined from broad aspects or from social-economic concepts / social-economic definition/

Productivity growth is considered as the main source of the social-economic development, the livelihood improvements of the citizens of any country.

Graph 1. GDP, Employed, Labor productivity (% increase or decrease)



At the overall economic level, labor productivity is measured in real GDP per worker measured. In the case of Mongolia, labor productivity increased from MNT 10.4 million in 2011 to MNT 15.8 million in 2019. The average annual growth for 2011-2019 was 6.4 percent. The 14.1 percent increase in labor productivity in 2019 was due to a decrease in the number of employees.

Productivity growth can be maintained in the following circumstances:

- Increase of outputs, decrease of inputs: achieve the highest results by using the lowest costs
- Increase of outputs, staying constant of inputs: achieve higher results by using the same costs
- Achieve higher results by using the same costs
- Staying constant of outputs and decrease of inputs achieve similar results by using the lower costs
- Output growth outruns input growth: achieve the highest results
- Input decrease outruns output decrease: the lowest cost principle

The theory and practice of productivity determines it in three forms.

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Total Productivities figured out the value of the good that can be sold by the amount of money, using 1 MNT of total cost to produce goods and services. In other words, it is figure that represents the value of total output divided by the cost of all input

Total-factor productivity (TFP) is defined labor, which is considered as the main factor of production and the efficiency of capital usage; moreover, TFP shows the efficient combination of the labor and capital. Thus, Total-factor productivity can be seen as the main indicator that shows the effects of science and technological advances.

Partial Productivities defined at the country level; however, the levels of sectors and business entities can be applied. Moreover, partial factor measures other cost options as labor, machine, capital, material or energy. The indicator shows the value of the good that can be sold by the amount of money, using 1 MNT of total cost to produce goods and services.

The practices of developed countries show that Productivity is seen as the main leverage of economic growth and developments not only on the country or business entity level, but also of the households of citizens. Moreover, preliminary results of salary and wage and productivity review the country illustrate that when business entities increase salaries of employees they pay no attention to the relevance of the salary increase with productivity growth. Moreover, there has been an indicator that awareness on Productivity importance of not only employers, but also employees appears to be very low.[3]The Asian Productivity Organization (APO) is a nonpolitical, nonprofit, and nondiscriminatory organization devoted to productivity of Asian countries and it declares its activities under the motto "Making tomorrow better than today" Thus, in order to make our tomorrow better that today, we need to utilize our resources efficiently and create the basis of sustainable development. Furthermore, it is required to maintain efficient programs of sustainable and effective labor force and its usage on the business entity level.

Labor resource of any organization and its related labor usage is regarded as one of the forms of capital usage. In order to evaluate those procedures, labor productivity indicators are defined by the following options[4]:

1.By the conventional method or by products produced, or by sales revenue

$$\text{Labor Productivity}_1 = \frac{N}{R} \quad (2)$$

N- Products and sales revenue

R-Number of employees

2. By added value of newly produced

[3]Resolution of Trilateral agreement of social, economic and labor problems, №05 Ulaanbaatar, 17.11.2012

[4]SAINJARGAL *"Financial statement Analysis*" Ulaanbaatar, 1999 pp 25-29

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$$\text{Labor Productivity}_2 = \frac{AV}{WE} = \frac{AV}{R} : \frac{WE}{R} = \frac{M}{SA} (3)$$

AV-Additional value

WE-Labor cost

M-Labor Productivity

SA-Salary approximate

The ratio of Additional value and Labor cost determines Labor Productivities Wages ratio that is considered the amount of employed labor. The influencing factor on per employee Labor cost falls into intensive and extensive factors. Intensive factor is made of average labor per employee and the indicators to influence on the work such as: the changes in labor usage, the completion of the performance norms, experience of employee, professional skills and the level of technological advances of the manufacturer. The extensive factor includes all the indicators related to the working hours of employees such as: total days of employees per year, hourly norm of per working day and the amount of idle time.

Table 1. Indicators of Labor Productivity "XXX" of 2018-2019 financial year

Indicator	Symbols	2018	2019	Variations	
				By numbers	By percent
1.Manufactured goods(thousand/MNT)	N	40450,8	44090,7	3639,9	108,998
2. Number of employees	R	170	175	7	102,941
3. Days employees worked (man day)	D	41650	40425	-1225	97,058
4.Hours employees worked (man hour)	F	312375	307230	-5145	98,352
Of: overtime worked (man hour)	FA	-	6063		
5. Labor Productivity per employee (MNT): Of it:	M	237945,88	251946,85	14000,97	105,884
Yearly (1:2)	MD	971,2	1090,67	119,47	112,301
Daily (1:3)	MG	129,494	143,510	14,016	110,823
Hourly (1:4)					
6. Total days of per employee in per year (3:2)	S	245	231	-14	94,285
7. Duration of working day (4:3)	P	7,5	7,6	0,1	101,333

Source: data estimated by the authors on the basis financial statement of ….

The ratio of yearly, daily and hourly Productivity growth of per employee is in reliance with each other[5].

1. When the clause of M>MD>MG is sustained, it is called "appropriate ratio" and is maintained if the loss hours during a full day and the day shift is decreased.

[5]NARANCHIMEG.L"The problems of theory and methodology of financial sustainability analysis" Ulaanbaatar, 2010pp 75-78.

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2. At M>MD<MG indicates the full day usage, but the increase of the loss hours during the dayshift
3. M<MD>MG indicates the decrease of the loss hours during the day shift, but the increase of the loss hours during the full day.

On the basis of the reliance, influences of intensive and extensive effects on per employee productivity per year can be figured out by the indicators such as: number of the days the employee has been engaged in production; usage of the hours or duration of days and the changes in hourly productivity. Thus, it can be concluded:

$$M = \frac{D}{R} * \frac{F}{D} * \frac{N}{F} \quad (3)$$

Above example shows the reason of the increase by 14 000,97thousand MNT of productivity of per employee per year can be described as:

1. Productivity per year has declined as there was a decrease of number of working days per employee by 14 days

$$\Delta M_s = -14 * 7.5 * 129.494 = -13\ 596.87 \text{ thousand MNT (decrease)}$$

2. Productivity per year increased as duration of working days of employees by 0,1hour

$$\Delta M_p = 0.1 * 231 * 129.494 = 2\ 991.31 \text{ thousand MNT (increase)}$$

3. Productivity per year increased as efficiency of per hour of employees by 14,02 MNT

$$\Delta M_{MG} = 14.016 * 231 * 7.6 = 24\ 606.48 \text{ thousand MNT (increase)}$$

The influences of increase and decrease are shown above.

Total can be drawn of the 3 factor influences as: -13596, 87+2991, 31+24606, 48=14000, 92 thousand MNT

So far, researchers have grouped the influencing factors on Labor Productivity in number of categories; however, specialists have identified 8 groups of negative influences on Labor Productivity of the Mongolian ore mining sector[6].

1. Techniques and equipment
2. Motivation of employees
3. Labor safety
4. Materials and tools
5. External environment
6. Management skills and leadership
7. Organization, timetabling and work allotment
8. Workforce

[6]SUNJIDMAA.T, OYUNTSETSEG.L "Research on influencing factors on Labor Productivity" Journal of Mongolian Population, № (470)27,2017pp28-29

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The influencing factors on Labor Productivity can be studied at the following 5 categories considering human resource capacity and company structure.

One.Size of inappropriate usage of labor
- State of employees to understand the roles and tasks
- State of staff to understand objectives of position
- State of proper balance of work load

Two.Motivation policy
- Whether wages and other incentives affect positively
- Corporate culture influence
- Whether there is job satisfaction

Three.Technological advances
- Whether the equipment and tools that are used, meet requirements
- Whether the problems at work are solved

Four.Organizational structure
- Whether responsibilities and rights of the positions are in balance
- Whether job description is made into guidance
- Whether the tasks of job description are accomplished

Five.Human resource capacity
- Knowledge and skills of staff
- Job experience
- Whether staff has positive attitude

Conclusion and recommendations

Labor Productivity is considered as the main indicator that shows the efficiency of human resource usage. Moreover, Labor Productivity can be determined by how many goods and services to be produced the amounts of products manufactured per time (per hour, per week, per month, per year etc.), the amount the work accomplished or by the unit cost of labor usage. One of the main factors of the current era of competitiveness is regarded high productivity Accomplishing competitive levels of effective accumulation and utilization of resources and maintaining productivity growth is considered as the foremost criteria of any business organization. Although the number of ways of increasing Labor Productivity (Japanese 5C, Kaizen, Just-in time, Benchmarking etc.) have been practiced by leading Mongolian companies, there are still drawbacks of focusing on the accurate estimation of Labor Productivity by added value, the ways to study and identify the increase and decrease of Labor Productivity by its influencing factors, and there have been still of inefficient usage of the issues in the future policies and planning. In the Mongolian circumstances it is recommended to apply the theoretical and practical management approach of Productivity “human-system-environment”.

References

1. A.ENSHASSI.S. Mohamed. Z. A.MUSTAFA.P.E. Mayer “Factors Affecting Labor Productivity in Building Projects in The Gaza Strip”. vol. 2007xiii .no 4. pp 245-254

Vol. 5, No.03; 2021

ISSN: 2456-7760

2. PODKAMINER Leon. "Labor productivity growth slowdown: an effect of economic stagnation rather than its cause" Vol 672017, sup:1 pp 67-77
3. Thomas R. Robinson, Elaine Henry, Wendy L. Pirie, Michael A "International financial statement analysis" John Wiley & Sons Inc, 2012, pp 657-670
4. MAIMON O, ROKACH L "Data Mining and Knowledge Discovery Handbook". New York, Springer, 2010, p1285
5. LISITSINA E.V, TOKARENKO G.S "Managing financial results of company" Financial Management, 2012. № 4. pp13–17
6. ERKHESH. A "Present Performance Measurement Practice of Mongolian Companies" The Business Education Journal 2016 №27, pp73-74
7. NARANCHIMEG.L, SAINJARGAL.B" Productivity growth and ways to sustain", Mongolian Population magazine,2016. №26, pp41-42
8. CHULUUNTSETSEG GOTOVDORJ. Some issues on salary and remuneration analysis. 3rd international conference MANDAKH University-2017, May 2017 pp 26-27. Ulaanbaatar, pp. 142-147
9. ENKHSAIKAN.S "Management of Productivity of the State", Ulaanbaatar, 2012, KITON printing pp 126-130
10. ANKHNIIBAYAR.L" Economics" Ulaanbaatar, 2012, MUNKHII USEG Printing, pp 198-199
11. SAINJARGAL.B "Financial statement Analysis" Ulaanbaatar, 1999 ZEL printing, pp 25-29
12. MOLOMJAMTS.D "Economic and Financial Analysis" Ulaanbaatar, 2026, NUM printing House, pp 199-208
13. NARANCHIMEG.L "Analysis of financial sustainability" Ulaanbaatar, 2011, SHUNRE Prints, pp 33-40
14. 18. NARANCHIMEG. L "The problems of theory and methodology of financial sustainability analysis" Ulaanbaatar, 2010, pp 75-78.
15. 19. SUNJIDMAA.T, OYUNTSETSEG.L "Research on influencing factors on Labor Productivity Journal of Mongolian Population, № (470)27,2017pp 28-29
16. L.Naranchimeg, Ch. Enkhamgalan Some Issues of Financial Stability Analysis (scirp.org) **DOI:** 10.4236/ib.2020.124010 . I Business > Vol.12 No.4, December 2020
17. Paola Parravicini, Alessandro The Labor Productivity Slowdown: The True Issue of the Italian Economy (scirp.org) **DOI:** 10.4236/ajibm.2019.91016, American Journal of Industrial and Business Management, Vol.9 No.1, January 2019