Technology, Human Capital and Performance in the Manufacturing Sector in Indonesia

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Abstract

This research studies the relationship between technology, human capital and financial capital in the manufacturing sector through human capital investment mechanisms and technology using secondary data from publicly traded companies in the manufacturing sector listed on the Indonesia Stock Exchange in the form of annual reports on related companies every year processed by regression using the average autoregression method. moving average. We find that investment in human capital and technology in the manufacturing sector in Indonesia is positively related to company earnings in the manufacturing sector.

Keywords : Technology, Indonesia, Human Capital

JEL Classification : C0, J24,J64

Background

The manufacturing sector is one of the sectors that absorbs quite a lot of workforce. Manufacture is a production sector that creates added value to a good so that the goods that are given added value become more useful and have higher economic value (Muqtada,2020).

The manufacturing sector requires at least two resources, namely financial resources and human resources. The manufacturing sector is also a sector that can create products en masse and encourage economic growth well. The manufacturing sector also supports other sectors such as the manufacturing agricultural equipment which supports agricultural sector (Popkova et al,2018).

The manufacturing sector is very important in the economy. Where the manufacturing sector depends on its production inputs, namely production inputs for raw goods and production inputs for human resources who process these raw materials into manufactured products (Ockert,2021).

In producing its products, the manufacturing sector can increase its production through investment in technology and investment in human resources. Investments in technology and work equipment help workers to work better and faster. However, to master the latest technology, workers also need to have sufficient human capital so that it requires investment in human resources through the human capital investment mechanism (Oqubay et al,2020).

Literature Review

Manufacturing is an effort to create products through the addition of added value or use value to raw materials by forming, combining or changing forms into new goods that are more beneficial to humans. In the process of production activities in the manufacturing sector, it requires technology, expert knowledge, raw materials and skilled workers in producing its products (Akenji & Briggs,2015).

Manufacturing can never be separated from the elements of raw materials and humans. To purchase raw materials, equipment, production sites and machinery require financial capital. To operate machines, evaluate production results and supervise production activities requires human capital (Daft,2020).

In the manufacturing sector, the education and training process can be carried out in the workplace supervised by supervisors and trainers. This on-the-job training is generally supervised by experienced and professional senior workers to train their juniors. However, there are technological developments and new technological adaptations. The knowledge gained from habit and experience is not sufficient. New adaptations and training are needed to learn, master and adopt new technologies and new ways that can be adapted to work so as to create a better production process. The training process in this new case requires training outside the workplace (Lucas,2020).

Human capital, technology and financial capital are interrelated. Where financial capital can grow along with the production process to sales and continues to rotate, known as cash flow. Technology requires investment from financial capital. Likewise, with human resources who also need financial capital for employee payroll, employee training and development, even the recruitment process also requires financial capital. With increasing human capital and technology, business is increasingly profitable and increases the accumulation of financial capital in line with business development (Costa et al,2020).

Research Method

This research studies the relationship between technology, human capital and financial capital in the manufacturing sector through human capital investment mechanisms and technology using secondary data from publicly traded companies in the manufacturing sector listed on the Indonesia Stock Exchange in the form of annual reports on related companies, which are processed annually using the average autoregression method moving average with the following equation:

$$Y_t = C_t + \beta_1 HCI_{t1} + \beta_2 TI_{t2} + e_t$$

Where,
Y = Income
C = Constant
HCI = Human Capital Investment
IT = Technology Investment
e = Error Term

All data is calculated in USD.

Result and Discussion

The estimation results are as follows:

Y = -568773.046868 + 3.45950719688*HCI + 1.80972626317*TI

From the estimation results, investment in human capital and technology in the manufacturing sector in Indonesia is positively related to income. Where a 3% increase in human capital investment and a 1.8% increase in technology investment can increase revenue by 1% Table 1 illustrates the estimation results as follows:

Table 1. Hasil Estimasi

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-568773	2904710	-0.195811	0.8471
HCI	3.459507	1.82725	1.893287	0.0755
TI	1.809726	1.801063	1.00481	0.33
R-squared	0.87	Mean dependent var		14365743
Adjusted R-squared	0.84	S.D. dependent var		5719200
S.E. of regression	2894648	Akaike info criterion		32.73211
Sum squared resid	142000000000000.00	Schwarz criterion		32.88147
Log likelihood	-324.3211	Hannan-Quinn criter.		32.76126
F-statistic	28.58537	Durbin-Watson stat		0.658626
Prob(F-statistic)	0.000004			

Based on the estimation results described in Table 1., it can be seen that the R-square is quite high, namely 0.87, so the quantitative calculation results show the level of truth of 87%. This means that the possibility of an increase in income from an increase in human capital and technology investment in the manufacturing sector in Indonesia is 87%.

Conclusion

The manufacturing sector is an important sector in Indonesia that supports almost all business sectors in Indonesia and meets the consumption needs of the Indonesian people. To improve the performance of the manufacturing sector, investment in human capital and technology is needed. So that there is a positive relationship between financial capital, human capital and technological capital.

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