International Journal of Innovation, Creativity and Change. www.ijicc.net
Volume 14, Issue 1, 2020

Human Capital Index of Entrepreneur and Performance in Small /Medium Enterprises

M. Farid Wajdi[a], Liana Mangifera[b], Muzakar Isa[c*], [a,b,c]Department of Management in Economic and Business Faculty, Universitas Muhammadiyah Surakarta Surakarta, Indonesia, Email: [a]farid.wajdi@ums.ac.id, [b]liana.mangifera@ums.ac.id, [c*]muzakar.isa@ums.ac.id

The purpose of this study is to analyze the role of the human capital index of entrepreneurs on performance of small/ medium enterprises. The study was conducted in Central Java, Indonesia. The samples included the manufacturing industries. The industries should meet the following criteria: the enterprises are in the manufacturing sector and have operated for a minimum of five years. The samples were 359 manufacturing firms, including food and beverage, handicraft, metal items, and furniture. The estimation of regression OLS was used to analyse the relationship between the aspects of training and small/ medium enterprises' performance aspects. The results showed that the impact of the human capital index of entrepreneurs had a positive significance on improving firms' performance. Performance was measured from various aspects to find the connection between human resource quality and performance. Measurement of the human capital index covering various aspects of human resources was complemented by its weighting.

Key words: *Human Capital Index, Performance, SME.*

Introduction

Human capital plays an important role in the economic development of any country (Adedeji and Campbell, 2013; Gunduz and Yahaya, 2018). Its role has been recognised since neoclassical periods as an economic growth agent (Susanne, 2009). Although a country is facing a lack of natural resources as a catalyst for economic growth, the availability of skilled human resources will help to capitalise on the growing capital of physical and natural resources. Therefore, human capital is essential for achieving sustainable development goals in a country (Tamura, 2006; Tambunan, 2008; Gunduz and Yahaya, 2018).

Human capital encompasses all processes capable of contributing to higher levels of knowledge and generating competitive entrepreneurs who are able to do business better (Dawson, 2012; Ojokuku and Sajuyigbe, 2015). Quality skills and human capital skills are needed to improve firm performance, especially in small and medium industries (Skuras, 2005; Dawson, 2012). Therefore, human development needs to be carried out so that human quality can be enhanced for the sake of economic development, especially through the development of firms in small industries (Ojokuku and Sajuyigbe, 2015).

The concept of human capital, according to modern perspectives, is pioneered by Becker (1962). In its development, the concept of human capital can be described as the capability or capacity, either from birth or offspring or collections formed during productive working life with other forms of capital or other inputs, aimed at achieving economic sustainability. Hence, the term human capital is generally defined as education, including knowledge and skills at the working-age accumulated through formal education, training, and experience (Centre for the Study of Living Standards, 2003).

Based on theory and models, human capital has the potential to impact on the creation of economic and business value (Dawson, 2012; Unger et al. 2011). Many studies emphasise that human capital is an important factor in explaining a firm's performance (Dawson, 2012; Pasanen, 2003; Pennings et al., 1998). In addition, there are the factors of entrepreneurial characteristics and firm operating processes that may affect firms' growth and survival (McGregor et al., 2004).

Most of the issues regarding the quality of human resources in small medium industries are issues in human capital research. However, past studies on human capital mostly cover only one or two aspects separately. Similarly, when analysing its relationship with performance aspects, most studies only examine one or two aspects of performance alone and often result in uncertain research results. However, in this study five aspects of human capital have been taken into account: education, training, work experience, skills, entrepreneurship and networking. It is expected that an entrepreneur has the full range of human capital aspects of having a good education, having received effective training, having completed work experience, having practical and complete work skills, possessing general entrepreneurship and cooperation is expected to achieve a high level of performance for their enterprises. But if they have only one part of the human capital aspect, when examined with the performance aspect separately will result in insignificant effects on performance. In addition, the measurement of achievement in the form of the human capital index should be established to measure the achievement of human capital as a whole. Through the human capital index, the role of the human capital of entrepreneurs is expected to be better known in terms of overall performance (Ojokuku and Sajuyigbe, 2015).

Education and training as human capital aspects are important aspects for entrepreneurs along with knowledge, skills, motivation, confidence, and an ability to provide solutions for short and long-term business issues (Widodo, 2018 Alžbeta et al 2018; Unger et al. 2011). Then in accordance with the initial concept of human capital from Schultz and Becker that education is a major factor in human capital, therefore education has the highest weight in measuring human capital value. Of course, training can have the same weighting as the education aspect. Furthermore, training, experience, and skills are aspects that have been widely used in measuring human capital.

Entrepreneurship as a motivational factor in entrepreneurs is an aspect of advocacy for entrepreneurs to boldly act to improve the firm's operations to achieve success (Unger et al. 2011, Suroso, et al. 2017). Networking is a factor supporting business activities to make firms easier to operate. Without the networks an entrepreneur is still able to operate his firm, although he will have difficulties to guarantee the firm operating smoothly.

Research Method

The study was conducted in Central Java, Indonesia, including the Regency of Klaten, Sukoharjo, Surakarta. The samples included the manufacturing industries. The industries should meet the following criteria: The enterprises belong to the manufacturing sector and have operated for a minimum of five years. The samples were 359 manufacturing firms, including food and beverage, convection, handicraft, metal items, and furniture.

Establishment of the Human Capital Index

The overall aspect of human capital is compiled by the entrepreneur's human capital index. To compile the human capital index of entrepreneurs, the results of the measurement of the scores of each human capital aspect are then normalised using the following formula (Ngatno et al. 2016, Isa et al 2019):

$$Normalization \quad HC_j = \sum_{i=1}^{n} \frac{NHC_i - \min}{mak - \min}$$

Where,

HC : is a human capital variable
NHC : is the value of the human capital variable
min : is the minimum value of the human capital variable
max : is the maximum value of the human capital variable
i : is an individual/entrepreneur
j : is the type of human capital variable

The next step is to determine the weighting of every aspect of human capital. The calculation of normalisation from every aspect of human capital is then weighted. Determination of weighted quantities is based on the roles of each aspect in shaping the quality of human capital.

The weighting of every aspect of human capital is based on the idea that education and training are an important aspect for entrepreneurs with knowledge, skills, motivation, confidence, and ability to provide solutions for short and long-term business issues (Unger et al. 2011). Then in accordance with the initial concept of human capital from Schultz and Becker about the importance of education – that education is a major factor in human capital – therefore education has the highest weight of 0.25. Obviously, training may have the same weighting as the education aspect, but the quality of the training involved with entrepreneurs is generally less suitable for the needs of small industry (Tambunan, 2001), so the score is smaller than for education. Furthermore, training, experience, and skills are aspects that have been widely used in measuring human capital; these three aspects are weighted equally to 0.2.

Table 1: The Weighted Index of Human Capital Aspect

Human Capital	**Human Capital Aspects Weight**
Education	0.25
Training	0.2
Experience	0.2
Skills	0.2
Entrepreneurship	0.1
Network	0.05
Amount	1.0

Entrepreneurship as a motivational factor in entrepreneurs is an aspect of advocacy for entrepreneurs to boldly act to improve the firm's operations to achieve success. However, the role of entrepreneurship is smaller under the previous aspects and is weighted 0.1. Network is a factor supporting the business activities to make firms easier to operate. Without the network of an entrepreneur, the firm is still able to operate although it will face difficulties to guarantee smooth operation. Hence, the network weighted aspect ratio is 0.05. From the above elaborations, the weighting of each aspect of human capital can be seen in Table 1.

Then the human capital index is obtained using the following formula:

$$IHC = \sum_{j=1}^{m} W_j HC_j$$

Where:
IHC is human capital index
W_j is weighted
HC is human capital aspect

Data Analysis Method

Analysis used to identify the influence of each training variable on all of the performance variables was employing the regression equation model of each performance aspect partially with an ordinary least square (OLS) model. In this study, to strengthen the analysis, estimations were made using control variables consisting of capital and skilled workers attached to each enterprise. Thus, the estimation of each dependent variable of performance is carried out twice without control variables and estimation with control variables. In general, the model of the training aspect impact on performance is expressed as follows:

Estimation without control variables:

$$P_{ik} = \alpha_{0k} + \beta_{1k} HCI + e_k$$

Estimation with control variables:

$$P_{ik} = \alpha_{0k} + \beta_{1k} HCI + \beta_{2k} CAP + \beta_{3k} SW + e_k$$

Where,
P : Performance
HCI : Human Capital Index
CAP : Capital as control variable
SW : Skilled Worker
α, : Constant
β, : Coefficient
I : Individual respondent
K : Types of dependent variables that is performance's aspect
N : Samples
E : Error

Result and Discussion

Human Capital Index of Entrepreneurs

From the achievements of the various aspects of human capital discussed above, it is essential to compile a human capital index that explains the achievement of human capital of entrepreneurs as a whole. In order to compile the entrepreneur's human capital index, as discussed in chapter four, the measurement of every aspect of human capital is normalised for each aspect and compares the weight of each aspect of human capital based on the roles of each aspect in determining the human resource's quality. The education aspect has the highest weight of 0.25, then the aspect of training, experience, and skills – all three have the same values as 0.2, while entrepreneurs is 0.1, and the net weighted network is 0.05. The results of the calculation of human capital index can be seen in Table 2. below.

Table 2: Human Capital Index

Interval Class	Amount	Percentage	Category
< 0.26	16	4.5	Very low
0.26 – 0.50	139	38.7	Low
0.51 – 0.75	134	37.3	Moderate
> 0.75	70	19.5	High
Total	359	100	

Source: Data Analysis of Human Capital Index Formulation, 2019

From Table 2, it is generally seen that the achievement of the entrepreneur's human capital index is in "low" and "moderate" categories, between the two distributions of the number of entrepreneurs which are almost equal to 38.7% and 37.3%. From the index score in "low" and "moderate" categories, it shows that the achievement of education, training, experience, skills, entrepreneurship, and network ownership from entrepreneurs is mostly "low" and "sufficient".

Next, the distribution of human capital index of entrepreneurs is described as follows. It appears that 4.5% of the entrepreneur's achievement index is very low, i.e. the human capital index is less than 0.26. This low index score shows that 16 or 4.5% of entrepreneurs of education, training, experience, skills, entrepreneurship, and ownership of the network is really low.

Achievement of the index of human capital of most entrepreneurs is seen between 0.26 and 0.50, which is categorised as the "low" category, with 139 or 38.7% of entrepreneurs. Then in a slightly lesser amount of 134 or 37.3%, entrepreneurs have a human capital index score of 0.51 to 0.75, thus, this is included in the "moderate" category. While the achievement of the human capital index in the "high" category with index score higher than 0.75, is 70 or 19.5%.

Next is the human capital index test on performance indicators. The human capital index is a combination of various aspects of human capital that demonstrates the achievement of the human capital of entrepreneurs (Renaud, and Anastasia. 2018). To compile the human capital index of entrepreneurs, the results of the measurement of the scores of every aspect of human capital are normalised for each aspect and measure the weight of every aspect of human capital based on the roles of each aspect in determining the quality of human resources of entrepreneurs. Regression budgeting decisions on each aspect of performance can be described as follows:

The Role of the Human Capital Index on Sales Performance

From the regression results in Table 3 below, it is clear that the accuracy of the model (the fitness), the four estimates are quite good, seen from significant t-statistical tests, R2 magnitude and significant F test at the 1% significance level. Sales are in the form of natural logarithms (Ln) so the constant on each budget is antilog.

From Table 3, the human capital index has a positive and significant impact on each budget at the 1% significance level. It means that entrepreneurs with higher human capital achievement will be more likely to achieve sales. The role of the human capital index also exists when control variables are included in budgeting. Thus, the human capital index is ensured as playing a role in improving sales performance.

Table 3: Impact of the Human Capital Index on Sales

Variable	**Without Control Variable**		**With Switch Control Variable**	
	β		β	
Constant	3.805	(1.167)***	4.602	(9.664)***
Human Capital Index	3.478	(3.478)***	2.058	(8.446)***
Capital			0.017	(15.882)***
Skilled workers			0.001	(0.393)
R2		0.305		0.594
Adjusted R2		0.303		0.590
F test		156.694***		173.072***

Note: *** is significant at 1%

From the control variables, the impact of the capital factor remains positive and significant at the 1% significance level on all budgeting, and the impact of skilled workers remains insignificant as the budgeting of human capital aspects on previous sales.

The Role of the Human Capital Index on Profits

Next from Table 4, the impact of the human capital index on profits can be seen. From regression results, it is seen that the fitness of each budgeting is quite good.

Table 4: Human Capital Index on Profit

Variable	**Without Control Variable**		**With Switch Control Variable**	
	β		β	
Constant	0.117	(4.110)***	0.101	(3.567)***
Human Capital Index	0.306	(6.872)***	0.333	(6.633)***
Capital			-0.001	(-3.154)***
Skilled workers			0.001	(1.810)*
R2		0.117		0.148
Adjusted R2		0.114		0.141
F test		47.226		20.602***

Note: *** is significant at 1% level of significance.

Similar to sales decision results, the human capital index shows to have a positive impact and signifies the profit for all estimates at the 1% significance level. The impact of capital factor on profit as the previous budgeting is seen negatively and significantly at the 1% significance level on all budgeting. Indeed, capital appreciation will lower the profit ratio if not accompanied by profit gains. While the impact of skilled workers is significant on the subdivision without subordinates, the budgeting of the skilled workers' sub-sector is not significant. It seems that skilled workers in the capital goods sub-sector do not play a role in increasing profits.

The Role of the ***Human Capital Index on Quality Product***

Next from Table 5 below can be seen the impact of the human capital index on quality. From the regression results, it is seen that the model's fitness, the four estimates are quite good.

Similar to previous estimates, the impact of the human capital index is positive and signifies for all estimates at the 1% significance level. It implies any increase in the index of the human capital of entrepreneurs will improve quality achievement. The role of the human capital index also exists when there are control variables included in the budgeting. Therefore, the human capital index is assured to improve product quality.

Table 5: Impact of Human Capital Index on Product Quality

Variable	Without Control Variable		With Control Variable	
	B		β	
Constant	61.258	(33.485)***	61.002	(33.382)***
Human Capital Index	28.552	(9.945)***	22.581	(6.996)***
Capital			0.042	(2.975)***
Skilled workers			0.047	(2.364)***
R2		(0.217)		(0.248)
Adjusted R2		(0.215)		(0.241)
F test		(98.911)***		(38.993)***

Note: *** is significant at 1%.

The impact of capital factors is equal to the budgeting of the quality, positive and significant at the 1% significance level on all levels of budgeting. Any capital increase of one million rupiah will increase the quality by 4%. Hence, capital rising will improve quality. While the impact of skilled workers and their incomes is greater than the coefficient of capital, though very small. It means that an increase in the ratio of skilled workers will improve the quality by almost 5%, either on budgeting without control variables or budgeting with controls.

The Role of the Human Capital Index on Customer Satisfaction

From Table 6, it shows the impact of the human capital index on customer satisfaction. From the regression results in Table 6, it can be seen that the four estimates show a fairly good result.

Table 6: The Role of Human Capital Index on Customer Satisfaction

Variable	Without Control Variable		With Switch Control Variable	
	β		β	
Constant	3.001	(3.132)***	2.671	(2.810)***
Human Capital Index	16.977	(11.288)***	13.410	(7.985)***
Capital			0.020	(2.676)***
Skilled workers			0.037	(3.515)***
R2		(0.263)		(0.302)
Adjusted R2		(0.261)		(0.296)
F test		(127.428)***		(51.156)***

Note: *** is significant at 1%.

Similar to the other aspect decisions, the impact of the human capital index is positive and signals for all estimates at the 1% significance level. The meaning of the achievement of the human capital index of entrepreneurs implies that entrepreneurs with higher human capital

achievement will obtain higher achievement of their customers' satisfaction. The role of the human capital index also exists when control variables are included in budgeting. Thus, the human capital index ensures its role in improving the performance of customer satisfaction.

From the role of the control variable, similar to the previous estimates, the impact of capital factors on satisfaction is still positive, which means any capital increase will enhance the value of customer satisfaction. Likewise, the impact of skilled workers is also potentially significant in both estimates.

From the regression results in Table 7 it can be seen that the model fitness, the four estimates, shows good results. From the results, it is similar to the budgeting of various aspects of performance, then the human capital index coefficient shows positivity and the performance index for all estimates is at the 1% significance level. The higher the human capital achievement of entrepreneurs, the higher the performance of the firm will be.

From control variables, the previous budgetary impact of capital factor impact on performance remains positive and significant. It means every capital increase will improve performance. Equally with capital factors, the impact of skilled workers is also potentially significant and significant in both estimations.

Conclusion

This study aims to analyse the role of the human capital index of entrepreneurs on performance of the small medium enterprises. The aspects of human capital are education, training, work experience, skills, entrepreneurship and networking. Training skill includes types of training and appropriate training. The performance is measured or assessed by the financial and non-financial dimensions. The financial dimension includes sales and profitability. The non-financial dimension includes product quality and customer satisfaction. Entrepreneurs with high degree education do not ensure good work expectations. Entrepreneurs with good education are not enough to produce good effort but should possess supporting skills (Ojokuku and Sajuyigbe, 2015; Suroso, et al. 2017). The business manager should follow various trainings to yield quality performance.

The impact of human capital aspects on the various aspects of the above performance concludes that each estimation of the human capital of entrepreneurs has same impacts on each performance aspect (Ojokuku and Sajuyigbe, 2015). The human capital index of entrepreneurs have a positive and significant impact on sales, profitability, product quality and customer satisfaction. Human capital is able to do business better. Human capital is needed to improve firm performance, especially in small and medium industries (Suroso, et al. 2017).

The results of the study elaborate that entrepreneurs with high human capital index also have high performance. The human capital index consists of aspects of education, training, experience, skills, entrepreneurship and ownership of the network (Wright and McMahan, 2011). These aspects are the benchmark for measuring the quality of entrepreneurs. The weighting of each aspect to create a human capital index will also show its relevance in measuring the quality of human resources of entrepreneurs.

The human capital index is able to measure entrepreneur quality more accurately in relation to business performance (Alžbeta et al 2018; Unger et al. 2011). The associated aspects of business performance consist of sales, profits, quality products, and customer satisfaction. The results of the analysis show that the role of human resource quality needs to be supported by capital ownership and skilled employees. The human capital index is important compared to capital and workers. This is indicated by the higher value of the coefficient of human capital compared to capital and workers.

Based on the aforementioned results, measurement of human resource quality that affects business performance must cover various aspects; one aspect is not enough such as education or training. Performance is also measured from various aspects to find the connection between human resource quality and performance. Measurement of the human capital index in research covering various aspects of HR is also complemented by the human resource aspect and its weighting.

Acknowledgment

The authors would like to thank LPPI and *LPPM Universitas Muhammadiyah Surakarta* for the financial support for this study.

REFERENCES

Adedeji, O. and Campbell, O. (2013). The role of higher education in human capital development (February 8, 2013). http://dx.doi.org/10.2139/ssrn.2380878

Alžbeta, K. Martin, M. and Miloš, H. 2018. Evaluating the Effectiveness of Investment in Human Capital in E-Business Enterprise in the Context of Sustainability. *Sustainability 2018, 10, 3211; doi:10.3390/su10093211*

Becker, Gary S. 1962. Human capital: A theoretical and empirical analysis, with special reference to education, 2nd. The University of Chicago Press, *NBER, ISBN: 0-226-04109-3, http://www.nber.org/books/beck75-1. [2 Mac 2006].*

Bruderl, J., Prusendorfer, P., Zeigler, R. 1992. Survival chances of newly founded business organisations. *American Sociological Review*. 57 (2): 227–241.

Centre for the Study of Living Standards. (2003). Proposed framework on human capital indicators,111 Sparks Street, Suite 500 Ottawa, Ontario K1P 5B5.

Dawson, A., (2012). Human capital in family businesses: Focusing on the individual level. *Journal of Family Business Strategy, 3(1): 3-11*

Gunduz, A. Y. and Yahaya, A. M. (2018). The importance of healthy human life on economic development. *Social Sciences. Vol. 7, No. 2, 2018, pp. 63-67. doi: 10.11648/j.ss.20180702.12*

Isa, M. and Mangifera, L. (2019). Continuous flood risk reduction on MSMEs: Implementation of MACTOR program. *Economic Journal of Emerging Markets, 11(1) 2019, 113-121*

Isa, M. and Mangifera, L. (2019). Flood risk reduction model on small medium enterprises" in social sciences on sustainable development for world challenge: The first economics, law, education and humanities international conference, *KnE Social Sciences, pages 430–439. DOI 10.18502/kss.v3i14.4328 Page 430*

Ngatno, A. E.P. and Widayanto. (2016). Human capital, enterpreneurial capital and SME's performance of traditional herbal industries in central Java, Indonesia: The mediating effect fo competitive advantage. *Archives of Business Research, 3(4), 9-25.*

Ojokuku, R.M. and Sajuyigbe, A.S. (2015). Effect of human capital development on the performance of small and medium scale enterprises in Nigeria. *Journal of Emerging Trends in Economics and Management Sciences (JETEMS) 6(1):88-93*

Pasanen, M. (2003). In search of factors affecting SME performance; The case of eastern Finland, Doctoral Dissertation, Faculty of Business and Information Technology of The University 2003, Department of Business and Management University of Kuopio, www.Uku.Fi/Kirjasto/Julkaisutoiminta/Julkmyyn.Htm. [9 February 2006]

Pennings, J.M., Lee, K., Witteloostuijn, A.v., (1998). Human capital, social capital, and firm dissolution. *Academy Management Journal*, 41: 425–440.

Renaud, B. and Anastasia, C. (2018). Entrepreneurial motivation and business performance: Evidence from a french microfinance institution. *Small Business Economics, Springer Verlag, 2018, 51 (4), pp.943-963. ff10.1007/s11187-017-9961-8ff. ffhalshs-01954474f*

Skuras, D. Meccherib, N., Moreirac, M. B., Roselld, J., Stathopouloua, S. (2005). Entrepreneurial human capital accumulation and the growth of rural businesses: A four-country survey in mountainous and lagging areas of the European Union. *Journal of Rural Studies* 21: 67–79.

Suroso, A. A. Andriyansah, A.I. (2017). Optimising SMEs' business performance through human capital management. *European Research Studies Journal Volume 20, Issue 4B, pp. 588-599.*

Susanne, B. (2009). Human capital and economic growth. *Dissertation, Wayne State University, 173 Pages; pp. 3366669.*

Tambunan, T. (2008). SME development, economic growth, and government intervention in a developing country: The indonesian story. *Journal of International Entrepreneurship 6(4), 147–167*

Tamura. R. (2006). Human capital and economic development. *Journal of Development Economics. 79 26–72.*

Unger, J. M., Rauch, A., Frese, M., & Rosenbusch, N. (2011). Human capital and entrepreneurial success: A metaanalytical review. *Journal of Business Venturing, 26(3), 341–358.*

Widodo, T.N. (2018). The development model of exploitability knowledge based on entrepreneurial learning to innovative performance and sustainable competitive advantage. International Journal of Innovation, Creativity and Change. Volume 4, Issue 2, November, 2018. www.ijicc.net

Wright, P. M. & McMahan, G. C. (2011). Exploring human capital: putting 'human'back into strategic human resource management. *Human Resource Management Journal*, 21, 93-104.