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ANALYSIS OF HUMAN CAPITAL LECTURER FACTORS IN THE PROCESS OF ACHIEVING THE VISION OF HIGHER EDUCATION

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ABSTRACT

The purpose of this study is to identify the factors of lecturer human capital that play a role in the process of achieving the vision of the university's vision. This study uses a quantitative approach, collecting data using a questionnaire to 166 lecturers from universities in Karawang Regency, West Java. Data analysis used factor analysis and cluster analysis – hierarchical dendrogram. The results of the factor analysis show that the lecturer human capital components that make up the achievement of the university's vision consist of four groups, namely core components, supporting components, processing components and outcomes components, while the results of the hierarchical-dendrogram analysis inform that the process of achieving the university's vision starts from two aspects. The main aspects of lecturer human capital are lecturer education and lecturer skills. This research is still in the study of identifying intellectual capital which is explained to individual university lecturers (Lecturer human capital) with a small sample area, so it still needs to be developed in a wider aspect of lecturer intellectual capital and its relationship with other indicators that can support the achievement of the university's vision. overall high. The results of this study greatly contribute to explaining the potential of human capital as an intangible asset of higher education and the process of its formation, so that universities can understand how to develop lecturers' human capital so that its potential can be utilized for the development of higher education as a whole.

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INTRODUCTION

The Directorate General of Higher Education (Dikti) of the Republic of Indonesia (2020) reports that the number of higher education institutions in Indonesia in 2020 is 4,593 institutions, consisting of 1,190 diploma education and 3,403 academic educational institutions. The number of study programs is 29,413 institutions consisting of 3,426 diploma study programs and 25,987 academic study programs. Then the number of lecturers was 312,890 people while the number of registered students reached 8,843,213 people.

The role of lecturers in universities is very important. Without university lecturers, they will not be able to carry out their duties as higher education institutions. Lecturers are professional educators and scientists with the main task of transforming, developing, and disseminating science, technology, and art through education, research, and community service. Lecturers are required to have pedagogic competence, personality, social, and professional competence.

Universities have different potentials and abilities in ensuring the qualifications and competencies of their lecturers. The problem that often arises, especially in universities organized by public (private) institutions, is the fulfillment of pedagogic competence and professional competence, especially for lecturers with doctoral education. This happens because of differences in financing capabilities, available time, opportunities, range of locations and motivations. The high cost has caused many lecturers who are pursuing their doctoral studies to have to stop midway because of the lecturer's ability to win scholarships both domestically and abroad.

Lecturers are the main Human Capital in driving the wheels of higher education. In addition to having the core task of organizing education, research and community service, lecturers also have additional duties to manage universities, occupying various important positions as organizational leaders both administratively and managerially, which of course must carry out various management functions.

Theodore, W. Schultz in 1960 was the originator of the theory or basic concept of human capital. He delivered his speech entitled Investing in Human Capital in front of economists and officials who are members of the American Economic Association. This concept basically assumes that humans are a form of capital or capital like other forms of capital, such as machines, technology, land, money, and materials. Humans as Human Capital are reflected in the form of knowledge, ideas, creativity, skills, and work productivity. In contrast to other forms of capital which are only treated as tools, Human Capital can invest itself through various forms of investment in Human Resources (HR), including formal education, informal education, work experience, health and nutrition and transmigration (Fattah, 2004).

Higher education human resources consist of lecturers and education staff. Investment in human resources in higher education is very important and plays a very important role in improving competence, experience, work culture, discipline, motivation, health and various knowledge which in turn will be able to create higher education resources that are healthy and skilled, productive and competitive.

Human capital development and development does not directly improve organizational performance but will have an impact on basic aspects in the form of work motivation, work culture, discipline and other organizational competencies such as the results of research conducted by Toole and Czammitzki (2007); Kamukama and Htayi (2010) state that human capital does not directly affect organizational performance, but must be supported by organizational competence.

Other studies have shown that human capital does not have a direct effect on organizational performance, but is mediated by innovation (Dakhli and Clercq, 2003; Popescu and Diaconu, 2008). While Chang et al. (2006) found that Human Capital (social and intellectual capital) had no significant effect on organizational performance, but innovation had an effect on performance at The Hsinchu Science Park and The Tainan Science Park in Taiwan.

Another determinant of performance is organizational learning, that universities have expertise in creating, retrieving and transferring knowledge, and modifying their behavior to reflect new knowledge and experiences. By continuing to carry out organizational learning, it is hoped that universities can improve their performance (Baldrige National Quality Program, 2010). Competitive universities can be identified from the high awards given by the community in the form of accreditation from the National Accreditation Board for Higher Education (BAN-PT) as superior universities or accreditation A, or marked by the number of students studying there, high productivity of higher education in the form of results. research, innovation, community service and its benefits for the government and the surrounding environment. It is understood that lecturer human capital is the main element that is able to drive the organization's business processes (Fadli et al, 2020).

This study aims to identify the factors of lecturer human capital that play a role in the process of achieving the vision of the university's vision.

LITERATURE REVIEW

1. Human Capital

Human Capital is one of the parts studied in intellectual capital. Intellectual capital research and Human Capital began to develop since the 1960s. Intellectual capital is an individual's potential that is not seen as a source of future value creation (Viedma, 2007). Stewart (1997) defines intellectual capital as intellectual material that can create company property, consisting of components of knowledge, information, intellectual property, experience, and others. While Bontis (2002) describes intellectual capital in a more detailed concept of collective knowledge capital embedded in human resources, organizational processes and network relationships in creating corporate value. Thus it can be understood that intellectual capital is intellectual material owned by individuals or collectives in an organization that can create value. Cortini and Benevene (2010) explained that the components of intellectual capital include aspects of individual innovation capacity, patents that have been created by employees, and various existing knowledge of employees (tacit knowledge), as well as collaboration and interaction between employees.

2. Lecturer Human Capital

Lecturer human capital (LHC) is part of the intellectual capital of lecturers which has long been recognized as an important factor for individual productivity. The notion of human capital as individual capital has been studied extensively by several previous studies such as Schultz (1961) and Becker (1962), now increasingly being identified as a factor influencing the competitiveness of companies (Bartel, 1989; Senker and Brady, 1989). Howell and Wolff, 1991). Human capital is a widely used concept with complex and varied definitions. In certain contexts it only means the result of the educational process (ie obtaining formal education), while in other circumstances it can include a wider range of investments that have the potential to affect the welfare and productivity of the community, company, and nation. (Mincer, 1996). Human Capital is an invisible asset (Itami 1987).

The Human Capital perspective is the main factor that can drive intellectual capital as a creator of corporate value (Göran Roos et al, 2001). Likewise with universities, the presence of lecturers is a key success factor that will move the wheels of organization and the journey of higher education to carry out the tridharma and produce values to achieve the vision it carries.

The lecturer's definition of human capital in this study was adapted from the definition of human capital as the creator of corporate value. Lecturer's human capital is all competencies possessed by lecturers who are born from birth and are added to various competencies that lecturers have acquired during their life, in the form of knowledge, skills, various knowledge and behaviors that can create value for the college where the lecturer works.

The dimension of Lecturer's measurement of human capital refers to the dimension of human capital. Afiouni (2013) explains the dimensions of human capital in five main components, namely (1) the cognitive component, consisting of aspects of knowledge, skills and abilities (KSA); (2) behavioral component, consisting of willingness and ability to socialize ASF; (3) fit component, consisting of alignment of components (1) and (2) with strategic imperatives; (4) the flexibility component, consisting of the ability to adapt to different business strategies; and (5) the measurement component, by assessing the contribution of human resources to value creation. Meanwhile, Ployhart and Kim (2014:381) measure human capital in individual capacity or unit level (collectively) based on KSAO (Knowledge, Skills, Abilities, and Other Characteristics).

3. Higher Education Vision

The vision is made to answer three important questions of the organization (Cortés-Sánchez, 2017): what business the organization is doing, what the organization should be doing, and where the organization wants to be in the future. The vision consists of a guiding philosophy that includes goals and core beliefs, and real hopes for the future (Collins and Porras, 1991), and Jones (1960). A strong business vision will help organizations predict the future, change and innovation, and improve employee efficiency (Yalçın, 2005). The vision of a good university should have been equipped with clear indicators of achievement of the vision, namely the plan for achieving accreditation, the quality of lecturers' intellectual capital, the quality of the 'tridharma HE'; graduate success; output quality and stakeholder assessment (Fadli et al, 2020).

From the above study, the concept of measuring lecturer human capital in the process of achieving the university's vision will be based on four sources of human capital competence, namely (1) knowledge; (2) skills; (3) ability; and (4) other sources of competence.

METHODOLOGY

This study uses a quantitative approach, multivariate analysis which will explain the indicators that play a role in developing lecturers' intellectual capital in an effort to develop lecturer competencies.

The research locus consisted of all Universities in Karawang Regency, both State Universities and Private Universities. The research sample was lecturers and education staff at the research locus. The research data was collected through questionnaires from ordinal scale data, so that before the analysis was carried out the transformation would be carried out into interval data. There are two analytical methods used, namely factor analysis and cluster hierarchical analysis - dendrogram. Factor analysis is used to classify indicators that have a close role and reduce indicators that have less role (Watkins, 2021). The analytical tool used for factor analysis is SPSS 2023, with the following working steps:

1) Data transformation from ordinal data to interval data;
2) Calculating KMO, Bartlett's test and Anti-Image;
3) Performing the first stage component matrix analysis followed by rotation if the loading factor < 0.5 and not homogeneous
4) Perform component matrix analysis in the next stage until the data is declared homogeneous,
5) Explain the components of the matrix formed and their respective roles according to the research theme by taking into account the initial eigenvalues and the total variance explained.

The cluster analysis used is hierarchical cluster analysis (Ding and He, 2004) and Honda, Notsu, and Ichihashi (2010), which is followed by a dendrogram analysis by calculating the proximity of the data characteristics of each indicator (Everitt et al, 2011). The grouping of lecturers' human capital is done by using a hierarchical clustering method using the Euclidean distance, and the Euclidean distance is calculated by the formula: $d_e(x,y)=\sqrt{(\sum_i(x_i-y_i)^2}$ where = (x1, 2,…,) and y = (y1, y2, …, y) are vectors of variable values from two observations. One of the most effective methods for conducting clustering is the Ward method for assessing the distance between clusters. Ward's method minimizes the number of squares for each pair of clusters that can be formed at each step. For the visualization of the results of the cluster analysis, it will be continued horizontally (Kruhlov and Tereshchenko, 2020). The working steps used for hierarchical cluster analysis and dendrogram analysis used SPSS 2023.

1) Transformation of ordinal data into interval data;
2) Determine the analysis model on Classify – Hierarchy Cluster
3) Define the agglomeration and range solutions for the 2 to 4 clusters you want to form.
4) Setting the plot on the Dendrogram
5) Activate the cluster method in the ward's method combo

RESULT AND DISCUSSION

1. Respondent Identity

The results of the analysis revealed that 166 respondents came from 5 universities in Karawang. This large number of samples already meets the requirements for multivariate analysis (Hair et al, 2014) so that factor analysis and cluster analysis can be carried out for this study. Most respondents came from Singaperbangsa University Karawang (51.2%) and Buana Perjuangan University Karawang (41.6%). The majority of respondents are permanent lecturers (87.95%), while the rest are DPK lecturers (1.2%) and NIDK lecturers (1.2%).

Table 1: Identity of Respondents

Respondent Identity	Amount	%
College Name		
1. University	154	92.8
2. Academy	12	7.2
Lecturer Status		
1. Permanent	146	87.95
lecturer	2	1.20
2. DPK	2	1.20
Lecturer	-	-
3. NIDK		
4. Teaching		
Staff		
Sum	**166**	**100**

2. Factor analysis

Factor analysis in this study is intended to look for factors that can explain the relationship or correlation between various independent indicators of human capital of university lecturers. The analysis begins by examining the KMO and Bartlett's Test scores. (Table 2).

The results of the first analysis showed the KMO value of 0.850. This value is greater than the required 0.5 with a significance of 0.00. This provides information that the processed data has met the minimum sample adequacy requirements for each indicator in factor analysis. Kaiser

(1970) and Guttman (1954) explain that the KMO value between 0.8 to 1.0 indicates an adequate number of samples.

Anti-image correlation analysis plays a role in examining the partial correlation of each indicator. The results of the preliminary analysis show that there are 2 (two) indicators with an anti-image value < 0.50 (artworks and obedience indicator) so that these two indicators need to be reduced gradually, starting with the indicator with the smallest anti-image value. After two reductions, the KMO Bartlett's Test increased by 0.861, this value was greater than the KMO before it was reduced. The final result shows that all indicators have an Anti-Image Correlation greater than 0.5. A large correlation value indicates a high ability to form a homogeneous indicator group (Kruhlov and Tereshchenko, 2020).

The results of the matrix component analysis show that the process of grouping Lecturer Human Capital indicators for achieving the university's vision at an early stage is still not homogeneous, so rotation is necessary. The results of the rotational analysis of 7 iterations provide information on the Initial Eigenvalues to form 4 metric components with Rotation Sums of Squared Loadings having Total Variance Explained Cumulative reaching 78.264%.

Table 2: Analysis of KMO, Bartlett's test and Anti-Image Correlation

Measurement Indicator	Before Reducing	After Reducing
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	.850	.861
Bartlett's Test of Sphericity		
Approx. Chi- Squares	6,641E3	6,081E3
df	378	325
Sign	.000	.000
Anti-image Correlation		
Lecturer Education	0,942	0,94
Lecturer Functional Position	0,826	0,839
Lecturer Competence	0,839	0,848
Field of Science	0,855	0,852
Technical Knowledge	0,927	0,923
Skills	0,888	0,887
Attitude	0,913	0,924
Honesty	0,783	0,792
Emotional Intelligence	0,799	0,852
Innovation	0,918	0,938
Career	0,632	0,618
Individual ability	0,905	0,907
Group Ability	0,824	0,814
Organizational ability	0,901	0,895
Work experience	0,839	0,855
Motivation	0,889	0,896
Flexibility	0,802	0,803
Loyalty	0,901	0,902
Commitment	0,829	0,84
Creativity	0,876	0,885
Entrepreneurship	0,734	0,771
Research result	0,802	0,796
Community Service Results	0,875	0,863

Publication Works	0,866	0,863
Design Works	0,848	0,846
Leadership	0,815	0,818
Artworks	0,495*	-
Obedience	0,492*	-

* Reduced (indicator of Artworks and obedience)

This provides information that from the 4 metrics component that is formed, it will be able to provide information as much as 78.264% of all Lecturer Human Capital factors of universities in Indonesia. This confirms what has been explained by Analysis (Rummel, 1970) that factor analysis is useful for finding unobserved factors, reducing data, and extracting all unique factors (Pater and Lewandowska, 2015) in this case Lecturer Human Capital Higher Education indicator .

In the first iteration process, the composition of the component metrics members is still not perfect, so rotation is necessary. The results of the Extraction Method with Principal Component Analysis and Rotation Method with Varimax with Kaiser Normalization followed by Rotation converged in 7 iterations form 4 main components.

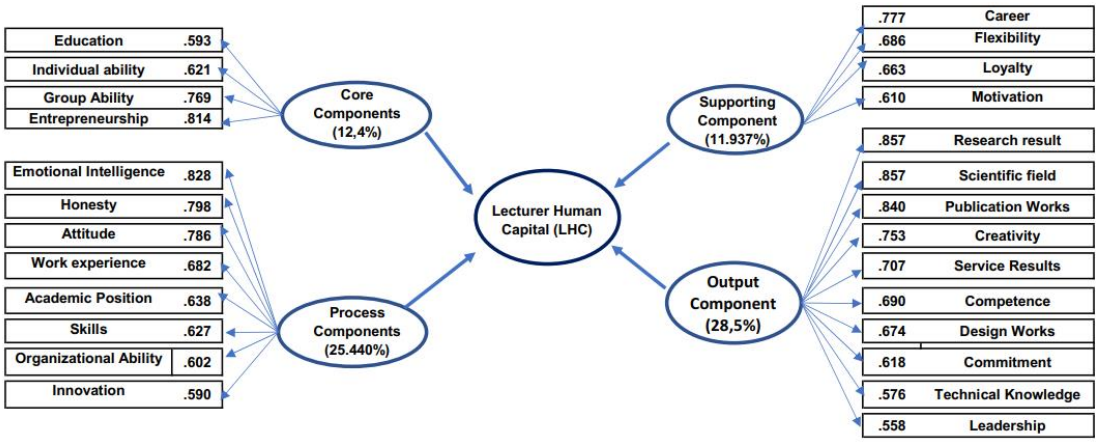

Figure 1: Component Metrics Lecturer Human Capital High Education

The results of this analysis show that the role of lecturer human capital in achieving the university's vision comes from 4 main components, namely: first, the core component, formed from 4 characteristics of lecturer human capital with the highest coefficient being lecturer entrepreneurship (0.814) and the lowest from lecturer education characteristics (0.593) (Figure 1). Second, the supporting component is formed from 4 characteristics of lecturer's human capital with the highest lecturer career coefficient (0.777) and the lowest lecturer motivation characteristic (0.610); third, the process component, formed from 8 characteristics of lecturer's human capital, with the highest coefficient being the lecturer's emotional intelligence (0.828) and the lowest from the lecturer's innovation characteristics (0.590); and fourth, the output component, formed from 10 characteristics of lecturers' human capital with the highest coefficient coming from the role of lecturers in producing research work (0.857) and the lowest contribution from lecturer leadership (0.558). The four components of the factors formed have the characteristics of knowledge, skills, abilities and behaviour, so that each component can be named a core group, supporters, processes and outputs of Human Capital lecturers as the main characteristics to achieve the vision of higher education in the future. This supports the results of Arifin's research (2017) that the vision and mission of the organization to compete in the future must be integrated with human capital development.

3. Cluster - Dendrogram Analysis

The Agglomeration Schedule analysis (Table 3) explains that the process of forming human Lecturer capital for the achievement of university vision from all analysed indicators is divided into two large groups with 25 stages of formation. The formation occurs starting from the indicator that has the lowest distance closeness which shows the closeness of the characteristics to the farthest distance in the Covariance matrix.

Table 3: Cluster Formation Process LHC to Achieve HE Vision

Agglomeration Schedule

Stage	Cluster Combined		Coefficients	Stage Cluster First Appears		Next Stage
	Cluster 1	Cluster 2		Cluster 1	Cluster 2	
1	1	12	9.609	0	0	20
2	22	23	23.015	0	0	19
3	9	10	50.064	0	0	6
4	24	25	77.929	0	0	13
5	7	8	108.903	0	0	14
6	9	16	142.696	3	0	15
7	4	20	178.187	0	0	13
8	17	18	215.328	0	0	17
9	14	26	253.077	0	0	14
10	2	3	293.874	0	0	16
11	6	15	335.251	0	0	15
12	13	19	377.347	0	0	19
13	4	24	428.152	7	4	18
14	7	14	480.322	5	9	16
15	6	9	535.159	11	6	17
16	2	7	600.218	10	14	20
17	6	17	673.976	15	8	22
18	4	5	758.321	13	0	21
19	13	22	855.691	12	2	24
20	1	2	963.939	1	16	21
21	1	4	1082.238	20	18	23
22	6	11	1201.709	17	0	24
23	1	21	1392.135	21	0	25
24	6	13	1586.157	22	19	25
25	1	6	2050.982	23	24	0

Furthermore, from the graph (Figure 2), it can also be analysed that the 25 stages of data agglomeration are finally summarized into 3 main stages, namely the formation of cluster 1, the formation of cluster 2 and the merging of cluster 1 and cluster 2.

a. Clustering Formation 1

The process of forming Cluster 1 goes through 6 stages of agglomeration. From the agglomeration process, it can be seen that in Cluster 1 the most important thing is the education of lecturers who animates all indicators in Cluster 1.

b. Clustering Formation 2

The process of forming Cluster 2 occurs through 6 stages of agglomeration. Broadly speaking, Cluster 2 produces human capital lecturers who have the skills to carry out their duties as university lecturers.

c. Formation of the Merger of Cluster 1 and Cluster 2

The merging of the characteristics of Cluster 1 and Cluster 2 occurs after the formation of all clusters of human capital lecturers in Cluster 1 and Cluster 2. From the agglomeration analysis it is explained that the third stage is the merging of the education group of lecturers from Cluster 1 and the group of lecturers' skills from Cluster 2. the end of Cluster 1 is cantered on the characteristics of lecturers' education, while in Cluster 2 all indicators are cantered on the characteristics of lecturers' skills. Thus, it can be concluded that lecturer education is the main factor in producing Lecturer's Human Capital skills in building higher education.

At each stage there is a merger of the characteristics of the Lecturer Human Capital indicator through the process of proximity or the most similar of its covariates (Everitt et al, 2011), so that the lecturer education indicators are understood to have characteristics that are closely related to the individual abilities of lecturers which will affect the group consisting of Lecturer Academic Positions. (JAD), competence, attitude, honesty, organizational and leadership skills, and groups consisting of scientific publication design, scientific, creative and technical fields. The knowledge possessed by the lecturer will also play a role in influencing the entrepreneurial ability of the lecturer.

Lecturer proficiency indicators have characteristics that are closely related to work experience that will play a role in influencing the group, namely emotional intelligence, innovation, and motivation, then with flexibility and loyalty groups, which in turn will play a role in determining the future career of lecturers. lecturers in developing groups, namely research, community service, group abilities and lecturers' commitment to work.

The hierarchical grouping method in establishing the role of HE Vision's lecturer human capital began to be formed from the simplest, single link, also known as the closest neighbour technique. It was first described by Florek et al. (1951) and later by Sneath (1957) and Johnson (1967), the distance between indicators as the closest pair of characteristics (Everitt et al, 2011) as a pair of lecturer human capital indicators consists of one indicator in each cluster which is considered as the process of each indicator Lecturer on Human Capital in achieving the university's vision.

CONCLUSION

This research resulted in three main studies, namely research indicators, the factors that formed and the process of forming the Human Capital of university lecturers.

The number of initial indicators studied to understand the concept of human capital for lecturers in this study was 34. The results of the validity analysis turned out to be only 28 indicators that could be used for further research and in the analysis of these factors were reduced again to 26 indicators that can explain the results of this study.

Higher education human capital lecturers who can achieve the vision of higher education are divided into four main sources. All of the formed factor components have the characteristics of knowledge, skills, abilities and behavior and are named core components, supporting components, processing components and output components. The core component consists of core indicators in achieving the university's vision. The supporting component consists of additional indicators, the Processing component consists of process indicators that will carry out higher education business processes, while the output component consists of Lecturer Human Capital indicators that are able to produce university outputs that are expected in the future.

The results of this analysis recommend that universities be able to focus on fostering the education and skills of lecturers to achieve the vision of superior tertiary institutions, as the results of the dendrogram analysis inform that the process of lecturer human capital in achieving the vision

of superior universities leads to two main clusters as the cause, namely education. lecturers and lecturer skills. Lecturer education has a role in building the individual abilities of lecturers, Lecturer Academic Positions (JAD), competencies, attitudes, honesty, organizational skills, leadership, scientific publications, design works, scientific fields, creativity in technical knowledge and building lecturer entrepreneurship. Indicator. Lecturer skills play a role in building work experience, emotional intelligence, innovation, and motivation, flexibility in work, loyalty, career, research, community service, group skills and lecturer commitment to work.

REFERENCES

Afiouni, F. (2013).Human capital management: a new name for HRM? *Int. J. Learning and Intellectual Capital*, Vol. 10, No. 1, pp.18–34.

Arifin, AL (2017). Development Strategy Of Human Capital Of Pt Kimia Farma (Persero) Tbk. *International Journal of Human Capital Management.* Vol. 2, No.2 , December 2017, p. 153-162.

Baldrige National Quality Program (2020) is an award program organization working to improve the competitiveness, quality, and productivity of US organizations by helping them improve the quality of their management. Their aim is to raise public awareness of the need for a systems approach to improvement, and share quality and performance improvement strategies.

Bartel, A. (1989), "Formal employee training programs and their impact on labor productivity: evidence from a human resources survey", *NBER Working Paper Series*, WP no. 3026.

Becker, G. (1962). Investments In Human Capital: A Theoretical Analysis. *Journal of Political Economy*, Vol. 70, pp. 9-44.

Bontis, N. & Fitz-enz, J. (2002). Intellectual capital ROI: a causal map of human capital antecedents and consequents. *Journal of Intellectual Capital*, 3 (3), (223-247).

Chang, Chiang, C., and Wang. (2006). The Study of Social Capital, organizational Learning, innovativeness, Intellectual Capital, and performance. *The Journal of Human Resource and Adult Learning* * November 2006.

Collins J. and Porras J. (1991). Organizational vision and visionary organizations. *California Management Review* 34: 30-52.

Cortés-Sánchez, J.D. 2017. Mission and Vision Statements of Universities Worldwide - A Content Analysis. Universidad del Rosario. *Facultad de Administración*. 152, ISSNe: 2463-1892. September 2017.

Cortini, M.and Benevene, P. (2010). Interaction between structural capital and human capital in Italian NPOs. *Journal of Intellectual Capital*, Vol. 11 No. 2, (123-139).

Dakhli M, de Clercq, D. (2004). Human Capital, Social Capital, And Innovation: A Multicountry Study. *Entrepreneur Regionion Development*, 16: 107–128.

Ding, C., & He, X. (2004). K-means clustering via principal component analysis. *Proceedings of the Twenty-First International Conference on Machine Learning*. https://doi.org/10.1145/1015330.1015408

Directorate General Of Higher Education (Dikti). (2020). Higher Education Statistics. Jakarta: Higher Education Database, Secretariat General of Higher Education, Ministry of Education and Culture.

Everitt B.S., Landau S., Leese M., Stahl D., (2011). Cluster Analysis, 5th Edition. United Kingdom. John Wiley & Sons Ltd Publication.

Fadli, U.M.D., Akbar, M., & Hamidah. (2020). Phenomenology Study On The Formulation Of A Vision To Achieve The Future Of The University. *International Journal of Human Capital Management*, 4 (2), 11-26. https://doi.org/10.21009/IJHCM.04.02.02

Fattah, Nanang. (2004). Ekonomi dan Pembiayaan Pendidikan. Bandung, Remaja Rosdakarya.

Florek, K., Lukaszewiez, L., Perkal, L. et al. (1951) Sur la liaison et la division des points d'un ensemble fini. *Colloquium Mathematicum*, 2, 282–285.

Göran Roos, Alan Bainbridge, Kristine Jacobsen. (2001). Intellectual Capital Analysis As A Strategic Tool. *Intellectual Capital Services (ICS) Ltd. Strategy and Leadership Journal*, July/Aug 2001, (29) 4, (21-26).

Guttman, L., (1954). Some necessary conditions for common-factor analysis. *Psychometrika*, 19, 149-161.

Hair, et al, 2014, Multivariate Data Analysis, New International Edition., New Jersey: Pearson

Honda, K., Notsu, A., & Ichihashi, H. (2010). Fuzzy PCA-Guided Robust k-Means Clustering. *IEEE Transactions on Fuzzy Systems*, 18(1), 67-79. https://doi.org/10.1109/TFUZZ.2009.2036603

Howell, D. and E. Wolff (1991), "Trends in the growth and distribution of skills in the U.S. workplace, 1960-1985". *Industrial and Labor Relations Review*, Vol. 44, no. 3, pp. 486-502.

Itami, H. (1987). *Mobilising invisible assets*. Boston: HBS Press.

Johnson, S. C. (1967) Hierarchical clustering schemes. *Psychometrika*, 32, 241–254.

Jones M. (1960). Evolving a Business Philosophy. *Academy of Management Journal* 3(2): 93-98.

Kaiser, H.F. (1970) A second generation little jiffy. *Psychometrika*, 35, 401-415. 1970.

Kamukama, A., and Htayi. (2010). Intellectual capital and Financial performance in Uganda Microfinance. *African Journal of Accounting, Economics, Finance and Banking Research* Vol. 6.

Kruhlov V., Tereshchenko D. (2020). Main Determinants Of Human capital Formation In Context Of Global Sustainable Development Goals. *Proceedings of the 2nd, International Scientific Conference,* Ljubljana May 29, 2020.

Mincer, J. (1996). Economic development, growth of human capital, and dynamics of the wage structure. *Journal of Economic Growth*, Vol. 1, No. 1, pp. 29-48.

Pater R., Lewandowska A. (2015). Human capital and innovativeness of the European Union regions. Innovation: *The European Journal of Social Science* Research (2015) Vol. 28, No. 1, 31–51, http://dx.doi.org/10.1080/ 13511610.2014.962487

Ployhart, RE and Kim.Y. (2014). The eefect of staffing and training on firm productivity and profit growth before, during, and after the great recession. *Journal of Applied Psycology* 2014, Vol.99, No.3, 361-389

Popesqu, and Diaconu. (2008). A new dimension to the rela- tionship between foreign direct investment and human capital: The role of political and civil rights. *Journal of International Development*, Faculty of Economics and Business Administration Alexandru Ioan Cuza University.

Rummel, R. J. 1970. Applied Factor Analysis. Evanston, IL: North-western University Press.

Schultz, T. (1961). Investment in human capital. *American Economic Review*, Vol. 51 (1), pp. 1-17.

Senker, P. and T. Brady (1989). Corporate Strategy: Skills, Education And Training, in M. Dodgson, Technology strategy and the firm: management and public policy, *Longman, a SPRU Publication*, Ch. 10, pp. 155-169.

Sneath, P. H. A. (1957) The application of computers to taxonomy. *Journal of General Microbiology*, 17, 201–226

Stewart, T. A. (1999). Intellectual capital: The new wealth of organizations. *New York: Currency Doubleday*. Unduh 20-10-2011

Toole, and Czarnitzki. (2007). Exploring the relationship between scientist human capital and firm performance: The case of biomedical academic entrepreneurs. *Discussion Paper* No. 07-011.

Viedma Marti J M. (2007). In Search of an Intellectual Capital Comprehensive Theory. *The Electronic Journal of Knowledge Management* Volume 5 Issue 2, pp 245 - 256

Watkins, M.W. (2021). *A step-by-step guide to exploratory factor analysis with SPSS*. New York, NY : Routledge.

Yalçın, İ. (2005). Küçük Ve Orta Ölçekli Işletmelerde Yeniden Yapilanma Stratejileri. Ankara: Nobel Yayınevi. ISBN 978-605-9663-06-9.