THE DEVELOPMENT OF A HUMAN CAPITAL MEASUREMENT AND DISCLOSURE RESEARCH INSTRUMENT FOR THE ZIMBABWEAN MINING COMPANIES

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ABSTRACT. Purpose: The aim of this study is to develop a research instrument to measure and disclose human capital value in the financial statements. The study has been motivated by a lack of guidelines that determine key aspects of human capital despite its contribution to value creation and financial performance. **Methodology**: This study adopted a post-positivist research philosophy which endorses a quantitative research approach. Quantitative data were collected using the survey questionnaire instrument from the six listed mining companies in Zimbabwe. A convenience sampling technique was utilised and a human capital measurement and disclosure instrument was validated using the exploratory factor analysis. **Findings:** The paper established eight factors namely; human capital measurements, profitability measures, employee competencies, value drivers, performance-related factors, market-related factors, employee exposures and structure-related factors. The developed questionnaire instrument can be of use to other scholars and policymakers if their studies are aiming to investigate the respondents' perceptions towards human capital reporting. This will also, provide a basis for the development of a standardised universal approach to measuring human capital value.

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Literature review and background

The fourth industrial revolution (Industry 4.0) emerged as a game changer in all spheres of the economy. Brown-Martin (2018) observed that the world is experiencing a transformation to Industry 4.0. This era is linked to artificial intelligence, robotics, and Internet of Things (IoT) and 3-D printing. Despite the emergence of the fourth industrial revolution, the majority of Zimbabwean mining companies are still heavily dependent on their workforce. The study focused on large-scale mining companies that are listed on the Zimbabwean Stock Exchange (ZSE). These companies have financial information that is easily accessible due to the listing rules and regulations. Furthermore, Zimbabwe is among the countries with the largest known deposits of platinum groups of metals. The Chamber of Mines of Zimbabwe (2020) affirms that the aforementioned minerals contribute largely to the gross domestic product (GDP) and reduction of poverty. Furthermore, the mining industry is a significant regional employer that provides employment to many.

According to Chukwunenye & Igbok (2011) human capital is viewed as a key factor in the value creation of mining companies. Apparently, it is not clear whether there is any research instrument for effectively measuring the value of human capital key aspects in the financial statements of mining companies. It follows that the development of an effective and reliable instrument will contribute immensely to practice (accounting profession and mining industry), scholars as well as policymakers. They will use this instrument to appropriately and fully

measure the value of human capital. This implies that if the key aspects of human capital are measured reliably, the quality of the financial statements will be enhanced. Against this background, the study seeks to develop and validate a research instrument that effectively measures human capital value.

Defining human capital

Becker (1974) defines human capital as skills, experience, talent and knowledge that have economic value to organisations which enables them to be productive and adaptable. This implies that the intangible asset value embodied in human capital includes knowledge, skill, innovativeness, and the ability of each individual employee to meet the allocated task(s) (Schutte *et al.,* 2021). According to Higson (2016) human capital is considered a significant information system in the 21st century that informs management on the changes that occur over time to the human resources of the business. This implies that the human capital is a key factor in the recruitment, selection, and training of employees conducted by the management. Newman (1999) further asserts that human capital is embodied in individual employees, taking into account the employees' competencies to create and retain a company's value and competitive advantage.

In addition, the definition of human capital value is context-based and influenced by the researcher's academic discipline and philosophies. Consequently, this has resulted in inconsistent reporting practices in the financial statements. By proposing the development of an instrument, this study attempts to provide information that will harmonise human capital terminology and disclosure practices.

Significance of human capital

According to Lin *et al.* (2010), human capital has the ability to drive a company toward a competitive advantage. In the mining sector, skills inherent in human resources, as exhibited by geologists, miners and the marketing and processing of ore to finer products, are essential competitive forces to gain a competitive advantage in the world market. Stahle (2014) advanced that the human capital element inherent in

intellectual capital (IC) is an intangible asset. Stahle (2014) furthermore noted that human capital as an asset in some organisational resources leads to stronger competitiveness and better performance since they are valuable, rare, inimitable, and non-substitutable. Moreover, Moloi & Adelowotan (2019) noted that measuring human capital may lead to the development of key performance indicators. However, Choudhury (2010) argued that even if human capital is measured properly, it has little value if it is not linked to the company's strategy. Labra & Sanchez (2013) corroborated the above by noting that human capital contributes to a company's true market value, which cannot be ascertained without measuring the intellectual capital component of the company's assets. Mondal & Ghosh (2012) found that intellectual capital is an important determining factor of profitability and that human capital is a significant contributor to a company returns.

Chen *et al.* (2021) stressed the importance of measuring and disclosing the actual value of human capital to the stakeholders of a company. In this regard, Rowe & Widener (2011), as well as Tan (2014), suggested that the measuring and disclosing human capital in the financial statements provide clearer information about the real value of the organisation. Furthermore, Suadiye (2012) asserted that the reporting of human capital has a positive contribution towards the transparency of organisations. However, some of the annual reports of mining companies lack comprehensive reporting on human capital. It is, therefore, evident that the key aspects of human capital measurement and disclosure in the Zimbabwean mining sector remain uncertain.

Methodology

This paper adopted a post-positivistic research philosophy which endorses a quantitative research approach. The population comprised management, professional and technicians' stakeholder groups at six listed mining companies in Zimbabwe. Quantitative data was collected through a survey questionnaire. A sample of 400 participants was selected from a population of 15,174 employees in the Zimbabwean mining sector. A convenient non-probability sampling technique was

adopted to identify the key informants. The research utilised factor analysis and to enhance the quality of the results, ten responses were established for each construct.

This study administered the questionnaire instrument using a 5-point Likert scale. In addition to an online questionnaire, the researcher distributed questionnaires for respondents to complete in their own time, after which the responses were collected by the researcher. In a further attempt to avoid a low response rate, the researcher sent the permission letters to the respective companies in advance.

Development of a questionnaire instrument

Prior to the development of the questionnaire instrument, the researcher critically reviewed a large number of published related papers on human capital disclosure practices. This paper then created a questionnaire for measuring and disclosing human capital based on the previous studies, taking into consideration the contextual settings of the studies. A pilot study, expert analysis and peer review were conducted to test the validity and reliability of the questionnaire instrument in accordance with the guidelines outlined by Zhou *et al.* (2019). This enabled the researcher to refine the research instrument to ensure that data was gathered to answer the research question of the study.

Discussion of the results

The data analysis process involved coding questionnaire responses, editing, classification and tabulation of the collected data. Confirmatory factor analysis was performed to determine how well the model fits the data and the explanatory reliability of the used data. The Cronbach Alpha value calculated for this study was 0.757. According to Gerber & Hall (2017), the minimum acceptable value for Cronbach Alpha is 0.6. The Cronbach Alpha value for this study is therefore considered reliable and acceptable.

Factor analysis

According to Hair *et al.* (2014), the main purpose of factor analysis is to examine the interdependence among the variables. It is vital to note that variables play a critical role in any multivariate analysis. Extant literature outlines that factor analysis provides the tools for analysing the structure of the correlation among the variables. The factors to measure human capital were extracted using the principal component analysis. The eight factors identified in this study were interpreted using the orthogonal factor rotation. The orthogonal rotational approach was adopted because it is widely used and easily interpreted (Hair *et al.*, 2014).

Eigenvalues

This paper utilised the latent criterion to retain all eight factors with eigenvalues greater than 1. These factors represented a 51.20% cumulative loading of the variance of 44 questionnaire statements. According to Fook *et al.* (2015), a cumulative loading above 50% is considered sufficient and acceptable. According to Hair *et al.* (2014), factors with latent roots (eigenvalues) greater than one are significant and those with values less than one are insignificant and should be disregarded. Furthermore, Field (2005) adduces that for a factor to be considered satisfactory, it should have three or more extracted variables for interpretation purposes.

Table 1. Results for extraction of component factors

Component	Initial eigenvalues		Cumulative %
	Total	**% of Variance**	
1	3.593	8.17	8.17
2	3.518	7.99	16.17
3	3.501	7.96	24.12
4	3.149	7.16	31.29
5	2.613	5.94	37.23
6	2.574	5.85	43.08
7	1.999	4.54	47.62
8	1.579	3.59	51.20

Source: authors' calculations

Table 2 below illustrates the rotated component analysis factor matrices. This study considered all variables with a factor loading above 0.4 to be significant. According to Gerber and Hall (2017), loadings above 0.40 is significant and/or meaningful. From the table, the factor loadings for the 44 variables remain almost identical, exhibiting both the same pattern and almost the same values for the loadings. From the data analysis, almost all loadings are above 0.70, representing more than half of the variance.

Table 2. Rotated component analysis factor matrices

Reduced Set of Variables	
	Factor 1
Cost of resignation	0.753
Workforce turnover	0.752
Return on employee investment	0.74
Return on Investment training	0.732
Comments on the abilities of key employees	0.704
Cost of absence	0.671
Employees' qualifications, experience and skills	0.656
	Factor 2
After tax return on sales	0.759
Overall response to competition	0.731
Relationship between expenses and income	0.719
Future prospects	0.714
Profit growth	0.698
Profit Margin	0.682
Sales growth	0.655
	Factor 3
Commitment	0.735
Creativity	0.734
Capabilities /Abilities	0.711
Team work	0.699
Skills and Expertise	0.695

Reduced Set of Variables	
Personal Experience	0.691
Professional Experience	0.685
	Factor 4
Employee health, wellness and safety	0.806
Employee motivation	0.767
Employee training and development	0.745
Relationship between employees and management	0.712
Low level of employee turnover	0.667
Positive employee behaviour	0.636
	Factor 5
Cost Effectiveness	0.743
Training Return on Investment	0.737
Liquidity of the company	0.737
Employee Return on Investment	0.726
Return on Equity	0.668
	Factor 6
Lobby groups pressure	0.775
Media Exposure	0.774
Level of Debt (Leverage/Gearing)	0.702
Credit Pressure	0.666
Government Pressure	0.662
	Factor 7
Human error (negligence)	0.75
Fraudulent/criminal activities by employees	0.738
Lack of recognition	0.714
Poor overall corporate culture	0.618
	Factor 8
Audit Committee	0.846
Board Size/composition	0.739
Assets-in-place (e.g. fixed or non-current assets)	0.563

Source: authors' calculations

Naming of factors

The naming of factors was done after satisfactory factors were derived. The process involved a substantive interpretation of the pattern of factor loadings for the variables (Hair *et al.,* 2014). All the factor loadings were substantially above the (+/-) 0.4 threshold and this made the interpretation quite straightforward. The naming of the factor was based on the variables with higher loadings.

Table 3. Factor naming

Factor	Name of the Factor	Questionnaire Statement Number (Variable number)	Questionnaire Statement (Reduced and Extracted variable)
1	Human capital measurements	6.1.8	Workforce turnover
		6.1.6	Return on employee investment
		6.1.7	Reurn on employee investment
		6.1.5	Comments on the abililies of key employees
		6.1.10	Cost of absence
		6.1.4	Employees' skills and expertise
2	Profitability measures	4.2.6	After tax return on sales
		4.2.8	Overall response to competition
		4.2.10	Relationship between expenses and income
		4.2.4	Future prospects
		4.2.2	Profit growth
		4.2.9	Profit margin
		4.2.3	Sales growth
3	Employee competencies	4.1.4	Creativity

Factor	Name of the Factor	Questionnaire Statement Number (Variable number)	Questionnaire Statement (Reduced and Extracted variable)
		4.1.5	Commitment
		4.1.6	Capabilities/Abilities
		4.1.7	Professional experience
		4.1.8	Personal experience
		4.1.9	Skills and expertise
		4.1.10	Team work
4	Value drivers	5.2.8	Employee wellness, health and safety
		5.2.7	Employee motivation
		5.2.6	Employee training and development
		5.2.5	Relationship between employees & management
		5.2.9	Low level of employee turnover
		5.2.10	Positive employee behaviour
5	Performance-related factors	3.2.4	Cost effectiveness
		3.2.8	Return on training investment
		3.2.2	Liquidity of the company
		3.2.7	Employee return on investment
		3.2.3	Return on equity
6	Market-related factors	3.3.7	Lobby groups pressure
		3.3.8	Media exposure
		3.3.6	Level of debt
		3.3.10	Credit pressure
		3.3.9	Government pressure

Factor	Name of the Factor	Questionnaire Statement Number (Variable number)	Questionnaire Statement (Reduced and Extracted variable)
7	Employee exposures	4.3.2	Human error
		4.3.5	Fraudulent/criminal activities
		4.3.10	Lack of recognition
		4.3.9	Poor overall corporate culture
8	Structure-related factors	3.1.6	Audit committee
		3.1.5	Board size/composition
		3.1.7	Assets-in place

Source: authors' compilation

Factor 1: Human capital measurements

This factor is made up of six significant variables that are highly correlated. These variables consist of factor loadings above the 0.4 threshold and are as follows: 6.1.8 workforce turnover, 6.1.6 return on employee investment, 6.1.7 return on investment training, 6.1.5 comments on the abilities of key employees, 6.1.10 cost of absence, 6.1.4 employees qualifications, experience and skills. A five-point Likert scale was used, starting from 1 - not useful at all, 2 - little useful, 3 - neutral, 4 – useful, and 5 - very useful. Seven insignificant variables were dropped, and these were 6.1.1, 6.1.2, 6.1.3, 6.1.9, 6.1.11, 6.1.12 and 6.1.13. The KMO-MSA value is well greater than 0.4 with a value of 0.865 and this indicates a significant correlation structure to perform exploratory factor analysis (EFA). Also, as indicated earlier in the chapter, the Bartlett's test of sphericity examines the correlation among all dependent variables and evaluates whether, collectively, significant inter-correlation exists. In this study, under factor 1, a significant degree of inter-correlation does exist (Significance = .000).

Factor 2: Profitability measures

Factor two is made up of seven variables and these variables had the highest factor loadings. These include 4.2.2 profit growth, 4.2.3 sales growth, 4.2.4 future prospects, 4.2.6 after-tax return on sales, 4.2.8 overall response to competition, 4.2.9 profit margin, 4.2.10 relationship between expenses and income. The managers' and employees' responses were rated on a scale ranging from: 1 - strongly disagree, 2 - disagree, 3 - neutral, 4 – agree, and 5 - strongly agree. From the factor analysis, six variables were deleted, including variables 4.2.1, 4.2.4, 4.2.5, 4.2.7, 4.2.11 and 4.2.12. The KMO-MSA and Bartlett's test of sphericity show that variables under consideration are significantly correlated with values of 0.840 (significance = 0.000).

Factor 3: Employee competencies

Factor 3 is made up of seven variables with the highest factor loadings and the naming of the factor highly depended on the variables with significant loadings. The naming of the factor was quite straightforward and the study named factor 3 employee competencies. The competencies have been proven to be significantly related to the companies' financial performance. These were 4.1.4 creativity, 4.1.5 commitment, 4.1.6 capabilities/abilities, 4.1.7 professional experience, 4.1.8 personal experience, 4.1.9 skills and expertise and 4.1.10 teamwork. From the factor analysis, 5 variables were dropped as they were not correlated to the extracted factor. These included variables 4.1.1, 4.1.2, 4.1.3, 4.1.11 and 4.1.12. This question focused on the linkage between human capital and the financial performance of the company. The KMO-MSA value shows a strong enough correlation among variables, with the value of 0.858 and Bartlett's test of sphericity shows the existence of a significant degree of inter-correlation (significance = 0.000).

Factor 4: Value drivers

Factor 4 contains six variables rated on a 5-point Likert scale rating from strongly agree to strongly disagree. The reduced and extracted variables consisted of 5.2.8 Employee health, wellness and safety, 5.2.7

employee motivation, 5.2.6 employee training and development, 5.2.5 relationship between employees and management, 5.2.9 low level of employee turnover and 5.2.10 Positive employee behaviour. The following 5 variables were deleted because they had insignificant factor loadings to the factor under consideration. These were variable 5.2.1, 5.2.2, 5.2.3, 5.2.4 and 5.2.11. The KMO-MSA value of 0.824 and Bartlett's test of sphericity of 0.000 show a significant correlation between the variables and this made it possible to conduct the factor analysis.

Factor 5: Performance-related factors

Factor 5 is made up of five variables rated on a 5-point Likert scale rating from strongly agree to strongly disagree. The reduced and extracted variables consisted of 3.2.4 cost-effectiveness, 3.2.8 training return on investment, 3.2.2 liquidity of the company, 3.2.7 employee return on investment and 3.2.3 return on equity. The following 3 variables were dropped because they had insignificant factor loadings to the factor under consideration. These were variables 3.2.1, 3.2.5 and 3.2.6. The KMO-MSA value of factor 5 is 0.798 and this indicates a strong enough inter-correlation of the structure of variables under consideration. Also, the Bartlett's test of sphericity shows a high degree of inter-correlations among all variables.

Factor 6: Market-related factors

Factor 6 is made up of five variables with the highest factor loadings and the naming of the factor highly depended on the variables with significant loadings. The naming of the factor was quite straightforward and the study named factor 6 importance of external stakeholder groups' pressure. The influence of these groups has been proven to be significantly related to human capital reporting. These were 3.3.7 lobby groups pressure, 3.3.8 media exposure, 3.3.6 level of debt (leverage/gearing), 3.3.10 credit pressure and 3.3.9 government pressure. From the factor analysis, 5 variables were dropped as they were not correlated to the extracted factor. These included variables 3.3.1, 3.3.2, 3.3.3, 3.3.4 and 3.3.5. The KMO-MSA value is way above 0.4 with a value of 0,769 and this indicated a significant correlation structure to perform EFA. Factor 6 shows that a significant degree of inter-correlation does exist (Significance = .000).

Factor 7: Employee exposures

This factor is made up of four significant variables. These are 4.3.2 human error (negligence), 4.3.5 fraudulent/criminal activities by employees, 4.3.10 lack of recognition and 4.3.9 poor overall corporate culture. Six variables were dropped because they were insignificant and not correlated to the formation of the factor under consideration. The dropped variables are 4.3.1, 4.3.3, 4.3.4, 4.3.6, 4.3.7 and 4.3.8. The KMO-MSA value of 0.695 and Bartlett's test of sphericity show a significant correlation.

Factor 8: Structure-related factors

Factor 8 contains 3 variables out of 7 and they were rated on a 5-point Likert scale rating from strongly agree to strongly disagree. The reduced and extracted variables consist of 3.1.6 audit committee, 3.1.5 board size/composition and 3.1.7 assets-in-place (e.g. Fixed or Non-current assets). The following 4 variables were deleted because they had insignificant factor loadings to the factor under consideration. These are variable 3.1.1, 3.1.2, 3.1.3 and 3.1.4. The KMO-MSA value shows a strong enough correlation among variables, with a value of 0.524 and Bartlett's Test of Sphericity shows the existence of a significant degree of inter-correlation (significance = 0.000)

Mean scores and Standard Deviation

Table 5 illustrates the mean scores of the questionnaire survey used in this study. The summated mean scores for the eight human capital measurement factors show that employee wellness and work environment was ranked the highest with a mean score of 4.3699. This was followed by the employee competencies factor with a mean score of 4.3517, and employee performance indicators (mean=4.3301). These were followed by the profitability measures with a mean score of 4.2738 in fourth position, followed by costs, cash-flows and investment management with a mean score of 4.2072 and human error and poor corporate culture of 4.0827. Factor 6 had a mean score of 4.0757 and the importance of committees and capital employed factor had the lowest rank with a mean score of 3.9788. The analysis shows that mean scores

range between agree and strongly agree ratings on the five-point Likert scale for all eight factors. This indicates that both the managers and employees seem to have a positive perception on human capital being measured and disclosed in the financial statements.

Table 4. Mean scores, standard deviation and rank order of human capital measurement

Factor	Mean score	Standard deviation	Position in a rank order
1. Human capital measurements	4.3301	0.48871	3
2. Profitability measures	4.2738	0.51708	4
3. Employee competencies	4.3517	0.48524	2
4. Value drivers	4.3699	0.50232	1
5. Performance-related factors	4.2072	0.54003	5
6. Market-related factors	4.0757	0.6128	7
7. Employee exposures	4.0827	0.56382	6
8. Structure-related factors	3.9788	0.64669	8

Source: authors' calculations

Conclusion

A research instrument was developed and validated for this study to measure the mining stakeholders' group perspective towards human capital being measured and disclosed in the financial statements. The study, through factor analysis, established 8 new factors with a total of 44 variables. The developed questionnaire instrument can be of use by scholars and policymakers if their studies are aiming to investigate the respondents' perceptions towards human capital reporting. This will also, provide a basis for the development of a standardised universal approach to measure human capital value.

The study was limited to the selected SADC countries, South Africa and Zimbabwe mining industries. The SADC has 15 member states with economies relying on mining and is also facing similar problems in measuring and disclosing human capital in their financial statements to provide value relevance of accounting information to stakeholders for decision making. Future studies might include all mining companies in selected Southern African countries as well as other parts of the world.

REFERENCES

Anyanwu, J.C. 2012. Why does foreign direct investment go where it goes? New evidence from African countries. *Annals of Economics and Finance*, 13-2: 433-470.

Becker, G. S. 1974. Human capital. New York: McGraw Hill.

Brown-Martin, G. 2018. Education and the Fourth Industrial Revolution (Learning to Thrive in a Transforming World). In 11th annual International Conference of Education, Research and Innovation: Seville, Spain.

Burton-Jones, A. & Spender, J.C. 2011. Interdependencies between People and Information Systems in Organizations', in Burton-Jones, A. and Spender, J-C. (eds.), The Oxford Handbook of Human Capital, Oxford, Oxford University Press.

Butler, A. 2013. Resource nationalism and the African National Congress, *The Journal of the Southern African Institute of Mining and Metallurgy*, 113(1): 11-20.

Chamber of Mines of Zimbabwe. 2022. Annual report. Retrieved from https://www.chamines.co.zw/home/AnnualReport.

Chen, M.Y. C., Lam, L.W. & Zhu, J.N.Y. 2021. Should companies invest in human resource development practices? The role of intellectual capital and organizational performance improvements. *Personnel Review*, 50(2): 460-477.

Chukwunenye, I.O., & Igbokwe, B.N. 2011. Training, manpower development and job performance: perception and relevance among civil servants in Ebonyi State, Nigeria. *Journal of Economics and International Finance*, 3(6):399-406.

Edvinsson, L. 2012. Developing intellectual capital at Skandia. *Long Range Planning,* 30:336-373.

Fatoki, O. & Garwe, D. 2011. Obstacles to the growth of new SMEs in South Africa: A principle component analysis approach. *African journal of business and management,* 4 (5):7.

Field, A. 2005. Discovering statistics using IBM SPSS statistics (3rd ed.). London, UK: SAGE Publications.

Fook, J., Collington, V., Ross, F. & Brookfield, S. 2015. Researching critical reflection multidisciplinary perspectives. Taylor and Francis.

Fulmer, I.S. & Ployhart, R.E. 2014. Our Most Important Asset: A Multidisciplinary/ Multilevel Review of Human Capital Valuation for Research and Practice. *Journal of Management*, 401(1):161-192.

Gerber, H. & Hall, R. 2017, Quantitative research design. Pretoria: HR Statistics.

Hair Jr, J. F., Black, W. C., Babin, B. J. & Anderson, R. E. 2014, Multivariate Data Analysis. 7th Ed. Essex: Pearson Education Limited.

Hatcher, L. 1994. A Step-by-Step Approach to Using the SAS System for Factor Analysis and Structural Equation Modelling. SAS Institute, Inc., Cary.

Healy. P. & Palepu, K. G. 2001. Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of Accounting and Economics*, 31(1): 405-440. 29-738.

Higson, C. 2016. Reporting Human Capital: Accounting for Human Resources. *Journal of Accounting & Finance*, 8(10): 330-350.

Iatridis, G. E. 2012. Voluntary IFRS disclosures: evidence from the transition from UK GAAP to IFRSs. *Managerial Auditing Journal*, 27(6): 573-597.

Labra, R. & Sanchez, M. P. 2013. National Intellectual Capital Assessment Models: A Literature Review. *Journal of Intellectual Capital*, 14(4):582.

Lin, C. Wang, C. Wang, C. Y. & Jaw, B. S. 2017. The role of human capital management in organizational competitiveness. *Social Behavior and Personality An International Journal*, 45(1):81-92.

Moloi, T. & Adelowotan, M. 2019. The perception of investment analysts on the decision-usefulness of human capital disclosures: a South African context. *Academy of Accounting and Financial Studies*, 22(5).

Mondal, A. & Ghosh, S. 2012. Intellectual capital and financial performance of Indian banks. *Journal of Intellectual Capital*, 13(4): 515-530.

Newman, B.H. 1999. Accounting recognition of human capital assets. New York: Pace University Press.

Rowe, B.J. and Widener, S.K. 2011. Where Performance Measurement and Knowledge Management Meet: Evaluating and Managing Corporate Knowledge. *Journal of Accounting and Finance*, 11(2): 91-106.

Schutte, D. Hugo, J. & Derbyshire, E. 2021. Value creation perceptions of management accountants in South Africa. *African Journal of Accounting and Financial Research*, 4(3): 120-138.

Stahle, P., Stahle, S. & Lin, C.Y.Y. 2015. Intangibles and national economic wealth – a new perspective on how they are linked. *Journal of Intellectual Capital*, 16 (1):20-57.

Stewart, T. A. 2011. Intellectual capital: The new wealth of organisations. London: Nicholas Brealey.

Suadiye, G. 2012. Value relevance of book value and earnings under the local GAAPs and IFRS: Evidence from Turkey. *Ege Akademik Bakis*, 12(3):301-310.

Tan, E. 2014. Human capital theory: A holistic criticism. Sage Publications.

Zhou L, Bao J, Setiawan I, Saptono A, & Parmanto B. 2019. The Health App Usability Questionnaire (MAUQ): Development and Validation Study. *JMIR Mhealth Uhealth*, 7(4):e11500.