HUMAN AND STRUCTURAL CAPITALS AND GROWTH STRATEGIES: EVIDENCE FROM LISTED NON-FINANCE FIRM ON THE NIGERIAN STOCK EXCHANGE

Tarilaye NWANKWE, PhD and **Prof. Chizoba Marcella EKWUEME[2]**
[1&2]Department of Accountancy, Faculty of Management Sciences, Nnamdi Azikiwe University, Awka, Anambra State.

Abstract
This study examined the relationship between human and structural capitals and growth strategies of firms in Nigeria. A total of seventy-five (75) non-finance firms listed firms on the Nigeria Stock Exchange were studied during the period 2012-2019. Data of structural and human capitals, and growth strategies (revenue growth in percentage - current year revenue minus previous year revenue divided by previous year revenue) were obtained from the annual reports and accounts of the non-finance firms. Data obtained were analyzed via descriptive results (mean, median, minimum and maximum values, standard deviation, kurtosis and skweness); pre-estimation results (correlation matrix, fixed and random effects, principal component analysis); and post-estimation results (variance inflation factor, and Hausman specification test). Findings indicated that human and structural capitals insignificantly affect firms' growth strategies. Given the findings, it was recommended that management of firms should reduce the staff costs since it has been proven that structural capital insignificantly affects growth strategies of firms. Also, there is the need for non-finance firms to disengage staff that are not productive and recruit viable staff, since the study establish that the human capital of non-finance firms does not significantly affect growth strategies of firms.
Keywords: Human capital; Structural capital; Growth strategies; Intellectual capital; Nigeria

Introduction

In contemporary times, the use of intellectual capital by firms in driving growth strategies has gained prominence, given that a firm's capability is strongly linked to its intellectual capital or its ability to exploit knowledge resources to actualize its growth strategy. Predominantly, intellectual capital has become one of the most valuable assets of modern organizations that are keen on outperforming competitors, becoming sustainable and realizing improved performance (Sardo & Serrasqueiro, 2018; Ahmad &Mushraf, 2011). In management literature, intellectual capital has been broadly defined and has diverse characterizations.

Stewart (1997) sees intellectual capital as total stock of knowledge, information, technologies, intellectual property right, experience, organization learning/ competence, customer relation, brands and team communication systems that are able to generate values for a firm. The view expressed by Stewart (1997) is supported by Isabel and Bailoa (2017) that intellectual capital is a set of intangible assets that

generate value for firms and seems to be the determining raw material in creation of sustained competitive advantages.

Similarly, Adnan, Ozlem and Mutlu (2014) see intellectual capital as the difference between a firm's market value and cost of replacing its assets. However, this study follows the characterization by Adnan *et al* (2014); and Isabel and Bailoa (2017); since they are closer constructs to management. Intellectual capital as opined by Kostopoulos, Papalexandris, Papachroni and Ioannou (2011), consists of human, social, structural and external (customer) capitals; this classification is admitted in general in accountancy and management.

In this study, two components of intellectual capitals were assessed – human and structural capitals. According to Hamideza, Ruzita and Parastou (2015), firms that employ intellectual capital do so in order to enhance growth strategies, due to transformation of the business landscape as a result of growth in information and knowledge. Moreover, with increasingly competitive and dynamic business landscape, where invention is the maxim, it is vital that firms must improve and sustain their ability to strategically manage and maximize the value that derives from their intellectual capital (Isabel &Bailoa, 2017).

On the other hand, growth strategy of firms is the outcome of decisions made to guide a firm with respect to its environment, structure and processes (Adnan *et.al.* 2014). Shakina and Barajas (2013); Khan and Terziovski (2014) believed that as firms move deeper into the information and knowledge era, management of knowledge turns out to be a critical element in their efforts to focus on growth strategies in order to solve more common problems. More significant to that is the role of intellectual capital as a corresponding medium for leveraging resources by providing a nexus to expedite the exchanging of valuable resources, new information and knowledge (Soheila, 2013).

In the Nigerian context, firms have witnessed unprecedented upsurge in growth in physical asset as opposed to intellectual capital (human and structural).While investment in human and structural capitals are gradually increasing, many Nigerian firms are still faced with the issue of how human and structural capitals can be harnessed in order to augment growth strategies. As a matter of fact, Nigerian firms largely depend to a considerable extent on their human and structural capitals for harnessed growth strategies.

Prior studies (Hoang, Bui & Nguyen, 2018; Isabel &Bailoa, 2017; and Rezvan, Merhrdad& Mohammed, 2016), especially in developed countries have depicted that intellectual capital plays a vital role in the growth process of firms; thus, indicating an link between intellectual capital and growth strategies of firms. However, little is known about the link between human and structural capitals and growth strategies of firms in Nigeria.

This issue is paramount for Nigeria specifically because it is aiming for a developed nation status by 2020. With only 1year remaining, its main intellectual capital indicators (human and structural) are still lagging behind those of developed nations like Europe and Asia (Orezi, 2018). In view of the above, this study was carried out with the view to examining the extent of relationship between human and structural capital and growth strategies of Nigerian firms.

Literature Review and Theoretical Framework

This section dealt with both the conceptual review and theoretical framework of the study. Several concepts were reviewed – human, and structural capitals as well as growth strategies while the theoretical framework of the study was anchored on the human capital theory.

Human Capital

The term human capital (HC) has been defined in diverse ways. According to Schultz (1993), HC refers to a firm's asset in the form of employee needed in order to increase productivity as well as sustaining competitive advantage. HC refer to processes that relate to education, training and other professional initiatives in order to enhance the level of skills, knowledge, values, abilities, and social assets of employees which will lead to improved strategies and eventually performance.

Rastogi (2000) opined that HC is a vital input for firms especially for employees' incessant enhancement primarily on skills, abilities and knowledge. Thus, HC is the skills, abilities and knowledge entrenched in people aimed at facilitating the creation of social, personal and economic well-being (Organization for Economic Co-Operation and Development, 2001).

Bontis *et al.* (1999) believed that HC capital which is a source of innovation strategic reconstruction is pivotal for growth strategies. Similarly, Roos and Roos(1997) opined that employees create intellectual capital via competence, attitudes, and their mental agility. In the same vein, Chen, Zhu and Xie (2004) argued that HC as a basis of IC refers to factors such as skills, competencies and attitudes of employees, which results in improved growth strategies, attracting customers, and performance.

These knowledge and skills according to Chen, et.al (2004), are in the mind of employees meaning that their mind carries skills and knowledge. Moreover, HC facilitates providing comprehensive information for investors or potential investors. Despite the increasing import of HC, most organizations, traditionally, report the money they spend for HC in financial statements as an expense and not an investment. In this study, human capital was measured or computed as revenue minus cost of revenue divided by staff cost.

Structural Capital

Structural capital (SC) can be defined as the infrastructure or groundwork regulating, authorizing and supporting intellectual capital (IC). Altinok (2005) sees SC as knowledge that does not go home and stay at the organization. Therefore, SC articulates the combination of all elements which are entrenched as methods and policies which a firm has and may range from information technologies-databases to records and diverse documentation, from management thinking to organization culture, from financial affairs to patents.

Moon and Kym (2006) opined that SC is less palpable and more specialized than other components of IC. Kong (2008) asserted that SC is the routine of all those knowledge deposited in procedures, databases, organizational culture and publications, which generates value for a firm. In other words, SC is the knowledge entrenched in a firm's processes, practices and routines (Jansen, Tempelaar, Van-den Bosch &Volberda, 2009). SC according to Watson and Stanworth (2006) encompasses non-human storehouses of knowledge in an organization and supports it IC, specifically the human component of intellectual capital.

More importantly, effective SC is built via the process, information system, culture and administrative system of a firm (Tseng & Goo, 2005). Moreover, it is only SC that belongs to and can be shared or reproduced within the firm. Thus, SC not only creates systems for knowledge acquisition (Crossan, Lane & White, 1999), but also provides a mechanism for collecting and integrating acquired knowledge (Grant, 1996).

Generally, human capital returns to their respective homes each night and the task of management therefore is to build ICs which do not return home at night; this can be achieved via SC. SC creates an atmosphere by which knowledge is crafted, ready to enter the market (Roos & Roos, 1997) and thus create value for a firm. SC should create IC assets and relates to mechanism and structure of a firm which helps employees in efficient intellectual functioning and increasing performance levels.

Besides, SC is the off shoot of human capital given the fact that human capital is the determining dynamics in the organizational form and thus, are dependent on each other. In this study, structural capital was measured or computed as the revenue minus cost of revenue and staff cost divided by revenue minus cost of revenue; this measurement considers the efficiency of structural capital of non-finance companies.

Growth Strategies

In reality, growth is fundamental to all forms of organisations for several reasons; these reasons among others encompassed attracting and keeping quality management, being economically upright, enhancing competitive advantage, meeting consumers' demands, increasing productivity, market share and overall, business performance (Ojukwu, 2006). For organisations to achieve growth certain strategies are needed to

drive the growth process; these strategies may entail operational problems, achieved benefits, business targets, performance, quality products and services, and no doubt are aimed at attracting and retaining consumers.

As observed by Akomea-Bonsu and Sampong (2012), growth strategies of firms are usually more influenced by operational problems, achieved benefits, business targets and performance. More specifically, growth is a function of summation of achieved benefits, targets, and performance excluding operational problems. The level of reduced effect of operational problems represent a negative indicator on growth, thus they are deducted from the sum of other three indicators (e.g. achieved benefits, targets and performance).

Noteworthy is the fact that one of the fundamental subcomponents of growth strategies indicators is the level of achieved performance, which according to Hoang, *et al*, (2018); Xu and Wang (2018) can be determined by revenue growth rate experienced by firms over a given period. The use of revenue growth rate is fundamental in assessing firms growth strategies due to the fact that when firms are able to effectively and efficiently realize their growth strategies, they expect an increase in the growth rate of revenue (Rezvan, *et.al*, 2016; Hoang, *etal*, 2018).

In this study, growth strategy was measured using revenue growth rate (in percentage); revenue growth rate in percentage is computed as current year revenue minus previous year revenue divided by previous year revenue. This measure of assessing growth strategies of firms is similar to those employed by Egbu (2004); Huang and Liu (2005); and Enweroke (2018).

Theoretical Framework

The human capital theory (HCT) is deep-rooted in the field of organizational development theory and propounded by Schultz (1993) and popularized by Becker (1993). Becker (1993) argued that there are diverse kinds of capitals available to an organization and suggests that human capital is not simply costs but investment with valuable returns for an entity, given the fact that investments in human capital improves the skills, knowledge, attributes, health and raise earnings or profits of an organization.

More also, human capital considers labour as a commodity that can be traded in terms of purchase and sale. Emphasizing the social and economic import of HCT, Becker (1993) notes the most valuable of all capital is that investment in human. Becker distinguishes firm-specific human from general-purpose human capitals. For instance, firm-specific human capitals are expertise obtained via education and training in management information systems, accounting procedures or other expertise specific job tasks. On the other hand, general-purpose human capital is knowledge gained via education and training in areas of value to a variety of firms like generic skills in human resource development.

The criticism connected with HCT is that the theory fails to see other forms as capital as drivers of growth strategies and organizational performance. For instance, aside human capital, there is intellectual capital which this theory fails to see as a driver of growth strategies and performance. In view of this, the resource-based theory was employed to substantiate the deficiencies of the HCT.

Regardless of the application, Becker considers education and training to be the most fundamental investment in human capital. The significance of HCT to the current study is that human capital fits the description of strategic capital, given the fact that it is valuable and investment in human capital promotes organizational strategies and overall, performance.

Research Methods

The current study is written to examine empirical link between human and structural capitals and growth strategies of selected non-finance firms in Nigeria. Therefore, the study used the quantitative research method of data collected on annual frequency with the aim of finding systematic validation of the assertion that companies with better record of human, and structural capitals practically account for some setout growth strategies. The study population comprised of all listed non-finance firms.

As at 31st December, 2019, there are ninety-one (91) non-finance firms listed on the floor of the Nigerian Stock Exchange (NSE); hence the study population is made up of the ninety-one (91) non-finance firms. A sample size of seventy-five (75) non-finance firms was obtained using the Taro-Yamane sample size determination formula. Data was obtained from secondary sources - the NSE Factbook and Annual Reports and Accounts of the listed firms in the non-financial subsector for the period 2012-2019.

The choice of this period is based on the fact that this era experienced improvements in financial reporting across the globe due to transition to the International Financial Reporting Standards (IFRSs) and the high demands for quality financial statements in the most capital markets of the world, including Nigeria. Following the submission of Kostopoulos, *et al.* (2011) intellectual capital was measured using human and structural capitals, while according to Rezvan, Merhrdad and Mohammed (2016) growth strategy can be measured by revenue growth in percentage. Putting these extremes together, intellectual capital and growth strategy equation is given as:

$$REVG = F(HUMC, STRUC) \qquad (3.1)$$

Where: REVG, represents revenue growth rate; HUMC, human capital; STRUC is structural capital. Eq. 3.1 can be expanded explicitly in a linear equation model, which the econometric set up may be rewritten as follows:

$$REVG_{it} = \beta_0 + \beta_1 HUMC_{it} + \beta_2 STRC_{it} + \varepsilon_{it} \qquad (3.2)$$

Where; β_0-β_{it} are parametric constants; and with time; ε $error$ term. The analysis was done in phases: descriptive (mean, standard deviation, minimum and maximum values; correlation); post-estimation (variance inflation factor; and principal component analysis); and inferential (fixed and random effects; and Hausman specification tests).

Table 1: Measurement of Variables

S/N	Variables	Measurement
1.	Structural Capital (STRC)	Structural capital efficiency ratio, measured as revenue minus cost of revenue and staff cost divided by revenue minus cost of revenue.
2.	Human Capital (HUMC)	Human capital efficiency ratio, measured as revenue minus cost of revenue divided by staff cost
3	Growth Strategies (REVG)	Revenue growth in percentage, computed as current year revenue minus previous year revenue divided by previous year revenue.

Source: Compiled by the Researcher, 2021

Results and Discussions

Table 2: Descriptive Statistics of the Variables

Statistics	revg	humc	strc
Mean	10.08015	3.77939	.591487
Median	4.5829	2.99510	.702500
Maximum Value	1354.255	73.3844	18.6774
Minimum Value	-100	-83.3867	-15.8750
Standard Deviation	76.8696	5.98658	1.44561
Skewness	11.5212	-2.16593	-1.41012
Kurtosis	179.1533	109.526	96.2171
Counts	587	587	591

Source: Computed by Researcher, via STATA 13.0 software

Presented in Table 2 is the descriptive statistics of dependent variable (growth strategies – revg); independent variables (human capital – humc; and structural capital – strc). It can be observed that none of the variables exhibited negative average values (mean); this is expected, given the characteristics of the periods covered (2012-2019), which is as a result of the impact of disclosure requirements by quoted non-finance companies driven by the International Financial Reporting Standards (IFRS).

Furthermore, the yearly standard deviations values range from 76.8696 (*revg*), 5.98658 (*humc)*, and 1.44561(*strc).* The yearly standard deviations values were not too dispersed from each other; except *revg*; an indication that the studied non-finance firms' intellectual capitals and growth strategies are closely related.

Remarkably, all panel data series (*revg*, *humc*, and *strc*), displayed non-zero skewness. Also, the variable of *revg* (11.5212) was skewed to the right as shown by the positive values while *humc* (-2.16593), and *strc*(-1.41012) are negatively skewed. Notably, all the variables have a normal distribution as indicated by kurtosis values, which are above three (3) (Gujarati, 2003); this suggests that all the study variables are normally distributed.

Table 3: Correlation Matrix of the Variables

Variables	Revenue growth	Human Capital	Structural Capital
Revenue Growth	1.0000		
Human Capital	0.4272	1.0000	
Structural Capital	0.0072	0.0739	1.0000

Source: Computed by Researcher, via STATA 13.0 software

Table 3 shows the correlation matrix for human, and structural capitals and growth strategies; the results showed that correlation between human and structural capitals and revenue growth strategies are positive. This implies that during the studied period, the intellectual capital measures *inter-alia* are positively related with growth strategies. Besides, the Karl Pearson coefficient did not exceed the maximum threshold of 0.9, as recommended by Gujarati (2003), indicating the absence of multicollinearity among pairs of the independent variables of the study.

Table 4: Variance Inflation Factor (VIF) Results of Variables

Variables	VIF	1/VIF
Human Capital	1.99	0.503530
Structural Capital	1.15	0.872495
Mean VIF	1.57	

Source: Computed by Researcher, via STATA 13.0 software

Table 4 shows the VIF for multicollinearity test; the mean VIF = 1.57, which is less than the accepted VIF value of 10.0, suggesting that there is absence of multicollinearity problem in the model. Impliedly, the VIF result provides evidence that the empirical models of human, and structural capitals and growth strategies is without bias.

Table 5: Factor Loadings (Pattern Matrix) and Unique Variances

Factors	Factor 1	Factor 2	Factor 3	Factor 4	Uniqueness	Commonality Σ(loading)2 or 1(-uniqueness)%
Humc	0.9379	-0.1129	-0.2661	0.1930	-0.0005	-95.00%
Strc	0.2345	0.9618	0.1103	-0.0885	-0.0000	-100.00%

Source: Computed by Researcher, via STATA 13.0 software

Presented in Table 5 is the factor loading estimates; it was found that the two (2) variables are strongly related with some specific factors and indicates the extent to which those variables load on the factors. In addition, the unique variances suggest that human capital (*-95.0%)* is highest commonality variables while structural capital (*-100.00%*) is the lowest commonality variable. This implies that human capital predict growth strategies of non-finance firms in Nigeria the most.

Table 6: Fixed and Random Effects Results for Human and Structural Capitals and Growth Strategies of Listed Non-Finance Firms in Nigeria

Variables	Human capital	Structural capital
FIXED EFFECT MODEL		
Coefficient t_ Statistics Prob._t	0.733098 (1.35) {0.177}	1.28188 (0.68) {0.497}
No. of Obs. = 580; F(4, 568) = 94.30; Prob.>F (0.0000); R^2 (within) = 0.3991; R^2 (between) = 0.1638; R^2 (overall) = 0.3944		
Coefficient t_ Statistics Prob._t	0.733098 (1.35) {0.177}	0.6121097 (0.35) {0.728}
RANDOM EFFECT MODEL		
No. of Obs. = 580; Wald Chi2(4) = 374.43; Prob.>F (0.0000); R^2 (within) = 0.3991; R^2 (between) = 0.1614; R^2 (overall) = 0.3944		

Hausman: = 0.9892; *Note: t & z -statistics and their respective probabilities are represented in () and {}*

*Where: *** represents 1% & ** represent 5% level of significance*

Source: Researcher's Computation, 2021 via STATA

Table 6 provides summary result obtained from both fixed and random effect models for human and structural capitals and growth strategies. The model has higher beta coefficient when RE is used; the RE beta coefficient are *humc*(0.733098), and *strc*(-0.6121097), which is higher than FE. A careful look at the Hausman specification result showed that the random effect model was appropriate for use. However, the study confirmed the result by taking a look at the p-value (0.9892).

The t-test result confirms that human and structural capitals are insignificant in explaining the variations in growth strategies of listed non-finance firms in Nigeria. Again, R^2 is 0.3944 for RE; impliedly, human and structural capitals explained about 39.44% variation in growth strategies of quoted non-finance firms in Nigeria.

In fact, prior studies (Hoang, Bui & Nguyen, 2018; Isabel &Bailoa, 2017; Rezvan, Merhrdad & Mohammed, 2016), particularly in developed nations have revealed that intellectual capital plays a fundamental role in the growth process of firms; however, whether this is the case in the Nigerian context, is an issue that has not been deeply researched. Intellectual capital was decomposed into two (2) components structural and human capitals. The study found that human and structural capitals insignificantly

affect growth strategies of non-finance firms in Nigeria. The findings correspond in part with the results of Egbu (2004); and Huang and Liu (2005); and Enweroke (2018).

Conclusion and Recommendations

This study examined the relationship between human and structural capitals and growth strategies of non-finance firms in Nigeria from 2012-2019. A total of seventy-five (75) firms were selected and data obtained were analyzed by means of both descriptive and inferential statistical techniques. Findings indicated that human and structural capitals do not affect growth strategies.

Given the findings of the study, it was recommended that management of firms should reduce the staff costs since it has been proven that structural capital insignificantly affects growth strategies of firms. More so, there is the need for non-finance firms to disengage staff that are not productive and recruit viable staff, since the study establish that the human capital of non-finance firms does not significantly affect growth strategies of firms.

This study contributes to knowledge by reaffirming the viewpoints of extant studies. More so, the study established that human and structural capitals are not significantly linked with the growth strategies of firms. Again, the study established that human capital is the most significant capital influencing firms' growth strategies when compared to structural capital.

References

Adnan, K., Ozlem, C.B. &Mutlu, A. (2014).The impacts of intellectual capital, innovation and organizational strategy on firm performance. *Procedia - Social and Behavioral Sciences*, *150*(2014), 700-707

Ahmad, S. &Mushraf, A. M. (2011). The relationship between intellectual capital and business performance: An empirical study in Iraqi industry. *International Proceedings of Economics Development and Research, 6*(1), 104-109.

Akomea-Bonsu, C. & Sampong, F. (2012).The impact of information and communication technologies on small and medium scale enterprises in the Kumasi Metropolis, Ghana, West Africa. *European Journal of Business and Management,* 4(20), 152-159

Altinok, T. (2005). Management of intellectual capital in terms of engineering and technology: Defence industry case. *International Symposium on Management and the Military*, Ankara, 26-27 May 2005.

Bontis, N., & Friend, W.C.C. (2000).Intellectual capital and business performance in Malaysian industries.*Journal of intellectual capital, 1*(1), 85-100.

Chen, J., Zhu, Z. &Xie, H.Y. (2004).Measuring intellectual capital: A new model and empirical study.*Journal of Intellectual Capital,5*(1),195-212.

Crossan, M.M., Lane, H.W. & White, R.E. (1999). An organizationallearning framework: from intuition to institution.*Academy of Management Review 24*(3), 522–37.

Egbu, C.O. (2004). Managing knowledge and intellectual capital for improved organizational innovations in the construction industry: an examination of critical success factors. *Engineering, Construction and Architectural Management, 11*(5), 301-315.

Grant, R.M. (1996). Toward a knowledge-based theory ofthe firm.*Strategic Management Journal, 17*(7), 109–22.

Gujarati, D.N. (2003). *Basic econometrics*.4th edition. New York: McGraw-Hill Inc.

Hamideza, J., Ruzita, A.R. &Parastou, A. (2015) Intellectual capital and investment opportunity set in advanced technology companies in Malaysia. *International Journal of Innovation and Applied Studies, 10*(3), 1022-1027

Hoang, T.N., Bui, Q.T. & Nguyen, V.P. (2018). The impact of intellectual capital dimensions on Vietnamese information communication technology firm performance: A mediation analysis of human and social capital. *Academy of Strategic Management Journal, 17*(1), 1-15

Huang, C.J. & Liu, C.J. (2005).Exploration for the relationship between innovation, IT and performance.*Journal of Intellectual Capital, 6*(2), 237-252.

Isabel, S. &Bailoa, R. (2017).Intellectual capital: The strategic resource of organizations. *The Małopolska School of Economics in Tarnów Research Papers Collection, 36*(4), 57-75

Jansen, J.J.P., Tempelaar, M.P., Van-den Bosch, F.A.J. &Volberda, H.W. (2009). Structural differentiation and ambidexterity: The mediating role of integration mechanisms. *Organization Science 20*: 797–811.

Khan, Y.K. &Terziovski, M. (2014).The effects of intellectual capital on performance in Australian small and medium enterprises (SMEs).*A conference paper,* pp.1-19

Kostopoulos, K., Papalexandris, A., Papachroni, M., &Ioannou, G. (2011).Absorptive capacity, innovation, and financial performance.*Journal of Business Research, 64*(12), 1335-1343.

Moon, Y.J., & Kym, H.G. (2006).A model for the value of intellectualcapital.*Canadian Journal of Administrative Sciences, 23*(3), 253-269.

Ojukwu, D. (2006). Achieving sustainable growth through the adoption of integrated business and information solutions: A case study of Nigerian small & medium-sized enterprises.*Journal of Information Technology Impact*, 6(1), 47-60

Orezi, M. (2018).Intellectual capital performance of quoted banks on the Nigerian stock exchange market.*Journal of Intellectual Capital*, *8*(2), 1-12

Organization for Economic Co-operation and Development (OECD) (2001).*The well-being of nations: The role of human and social capital*. Paris: OECD.

Rastogi, P.N. (2003). The nature and role of IC: Rethinking the process of value creation and sustained enterprise growth. *Journal of Intellectual Capital*, *4*(2), 227-248.

Rezvan, H., Merhrdad, G. & Mohammed, A. (2016). Intellectual, human and structural capital effects on firm performance as measured by Tobin's Q. *Knowledge and Process Management, 23*(4), 259-273

Roos, G. &Roos, J.(1997). Measuring your company'sintellectual performance.*Long RangePlanning, 30*(30), 413-426.

Sardo, F., &Serrasqueiro, Z. (2018). Intellectual capital, growth opportunities, and financial performance in European firms: Dynamic panel data analysis. *Journal of Intellectual Capital,19*: 747–767.

Schultz, T.W. (1993). The economic importance of human capital in modernization.*Education Economics, 1*(1), 13-19.

Shakina, E. & Barajas, A. (2013). The contribution of intellectual capital to value creation. *Journal of Contemporary Economics, 7*(4), 25-40.

Soheila, A. (2013). Intellectual capital knowledge management: Organizational value creation. *European Online Journal of Natural and Social Sciences, 2*(3), 462-476

Stewart, A.T. (1997). *Intellectual capital the new wealth of organizations,* New York: Bantam Doubleday Publishing.

Tseng, C-Y, & Goo, Y-JJ. (2005). Intellectual capital and corporate value in an emerging economy: empirical study of Taiwanese manufacturers. R&D *Management, 35*(2), 187–201.

Xu, J. & Wang, B. (2018). Intellectual capital, financial performance and companies' sustainable growth: evidence from the Korean manufacturing industry. Sustainability, 10: 1-5, doi:10.3390/su10124651

Youndt, M. A., & Snell, S. A. (2020). Human Resource Configurations, Intellectual Capital, and Organizational Performance. *Journal of Managerial Issues*, *32*(1), 60.