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Innovation in Utility Craftsmanship: Analysis Based on Human Capital

JOSE G. VARGAS-HERNANDEZ [1*], OMAR CRISTIAN VARGAS GONZALEZ [2]

[1] University of Guadalajara, Jalisco, Mexico

[2] Technological Institute of Ciudad Guzman, Jalisco, Mexico

Abstract: The objective of this work is to determine the relationship between human capital and artisanal innovation, nowadays, in Tonala Jalisco, artisanal pieces are produced in an innovative way, either ceramic or any variant of the mud technique, but what A substantial part of the business is what makes innovative business thinking possible. The Intellectus model, created by Eduardo Bueno in 2011, is used as a reference, distinguishing intellectual capital in three types of capital, but for the purpose of this study only analyzed the relationship of human capital with respect to artisanal innovation, the study was conducted in 2018 to 73 craft economic units, it was obtained through the technique of chi square that if there is a positive dependence on human capital and the innovation. Throughout this research the difference between handicraft and handicrafts was presumed, this difference refers to the object of study of this research, there are several models that measure and determine the intellectual capital in organizations, but the Intellectus model was chosen thanks to its simplicity of understanding and operationalization of variables, the literature revealed that each of the capitals that make up the intellectual capital and in turn help to generate indicators that help the interpretation of results. Through the analysis of results, it is concluded that: The human capital of artisan businesses is positively related to craft entrepreneurship.

Keywords: Competitive advantage, Crafts, Human capital, Innovation

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INTRODUCTION

The lack of innovative designs, the lack of use of new technology, scarce access to information and communication technologies, adding a lack of knowledge of the market, are problems that artisanal economic units face, preventing the development of products with innovative characteristics that could satisfy the needs of the consumer. There are more problems that have as their origin the absence of business training, highlighting that the artisan businesses are mostly undertaken spontaneously and by tradition, the companies that start the grandparents, are passed from generation to generation (Aimee, 2015).

This analysis relates the variables of innovation and human capital to enhance the craftsmanship of the ceramic industry in Tonala, Jalisco, Mexico. The organizational context is considered a mediating construct of organizational innovation and human capital development. Sustainable organizational development is leading towards supporting organizational changes through the application of experimental methods of standardization and managerial solutions with different implications of specific workplaces and conditions, such as organizational autonomy and leadership, flexible management practices, human resources training and development, etc.

Human capital and innovation are important engines for craftsmanship leading to economic growth. Organizational innovation is positively associated with human capital development in terms of work-force qualifications and training (Jones & Grimshaw, 2012; Organization for Economic Cooperation and Development, 2011; Piyachat, 2017). Organizational innovation practices require the best level of human capital, more highly educated and skilled workers with the abilities to generate, adopt, adapt and apply innovative knowledge and ideas (Kim, 2002). Human capital as part of resource management

*Corresponding author: Jose G. Vargas-Hernandez
†Email: jvargas2006@gmail.com

practices have a relationship with sustainable organizational development innovation and performance. The resource-based theory and knowledge-based theory argue that organizational human resources are equally relevant that other organizational resources to incorporate innovative processes in attaining sustainable organizational development performance.

Innovation as a source of competitive advantage improves sustainable organizational productivity and performance (Atalay, Anafarta, & Sarvan, 2013; Kitdumrongthum & Thechatakerng, 2018). Innovation decisions are affected by the development of human capital in educated and skilled craftsmanship able to create a competitive advantage in the ceramic industry. Human capital in terms of resource management and staff development influence organizational innovation working mechanisms playing a mediating role for sustainable organizational development performance. Working with innovative mechanisms and improved human resources practices more engaged with staff development are more open to organizational dynamics and more innovation change.

Human capital is reflected in skills and education levels of the workforce. Skilled and innovative job-related craftsmanship engage more on innovations (Khadan, 2018; Wasike, 2017). Skilled workforce is more positively associated with organizational innovation performance (Albaladejo & Romijn, 2000). Highly educated and skilled workforce develop more skills, abilities and capabilities is a factor to generate innovations and ideas to improve processes and products (Toner, 2011). The organizational human resource development and innovation practices promote creativity and productivity that have a positive relationship to sustainable organizational development outcomes. Human capital development is a relevant factor of the staffing creativity assuring high standard employees and organizations.

The organizational transformation and development processes based on the organizational structures development differ in relation to the specificities of the national economic system and the synergetic processes created between the human capital in sustainable organizational development and the level of innovation development. Regional economic growth, competition and technological innovation networks are some external factors that can be standardized for organizational growth and development (Miyatake, 1996).

When travel through Tonala, Jalisco, it can be seen colorful crafts that are distinguished by their beautiful colors, styles and cultural belonging to the region. Unfortunately, there are no unique designs, it could be seen that some artisans sell novel pieces, but if you continue to visit Several establishments can be found with very similar pieces.

BACKGROUND

Difference between handcrafts and crafts

The present study takes craftsmanship as an object of research, for this reason it is essential to distinguish between crafts and handicrafts. According to the National Fund for the Promotion of Crafts, crafts is an object or product of community cultural identity, made by manual processes continuous, aided by rudimentary implements and some of mechanical function that lighten certain tasks, and a handcraft is that object or product that is the result of a process of manual or semi-industrial transformation, from a raw material processed or prefabricated (National Fund for the Promotion of Handicrafts, 2016).

Industry

Size of craft companies

In order to classify the companies into micro, small or medium, the criterion of the number of employees is used. In Table 1, the number of employees can be differentiated between the different economic units of the commercial sector.

Table 1: Stratification of companies

	Sector	
Size	Industry	Commerce
Micro	From 0 - 10	From 0 - 10
Small	From 11 - 50	From 11 - 30
Median	From 51 - 250	From 31 - 100

Source: Official Gazette of Diario Federation- December 2002

It is time to classify the artisanal economic units, using the criterion of stratification with data from the Federation Official Gazzete (DOF), and from National Institute of Statistic and Geography (2018), the majority of artisanal enterprises, 97 percent, are classified as microenterprises. Only 2 percent are small artisanal enterprises and 1 percent is medium. More precisely, it is also found that approximately 97.33% of industrial economic artisan units are classified as microenterprises, while 96.48% of commercial artisan economic units are microenterprises.

Geographical location by sector

In this section it will be known the concentration of artisanal economic units in the United Mexican States. In Figure 1 it can be interpreted that the largest concentration of artisanal economic units is located in Jalisco, Colima and State of Mexico, for this reason the mentioned problem On the low valuation of artisanal products in Tonala, Jalisco is significant as a significant sample of Mexico.

Craft shops in Tonala

People as people have characteristics that distinguish them from others, Tonala reserved nature, craftsmanship qualities for the unique stamp that the authors print in each utilitarian or artistic piece. The potter's talent is an inheritance that has been passed on from generation to generation for hundreds of years, the art in clay is not only manual skill, but expression of the talent with which each potter was born.

Traditional techniques are still in production today and are listed below:

a. Burnished mud
b. Flagrock
c. Cinnamon mud
d. Clay betus
e. Petatillo clay
f. Black graffito
g. Natural mud
h. Polychrome clay
i. High temperature ceramics
j. Contemporary mud

Competitive advantage

It is important the valuation of the company that should not be based exclusively on the basis of its financial and economic indicators, since such valuation must fall especially on the intellectual capital of the company (Sanchez Medina, Melian Gonzalez, & Hormiga Perez, 2007). The correct use of competitive advantages will make the economic unit in question stand out among the existing ones in the same sector.

The intangible resources of the economic units are the main source of sustainable competitive advantage, specifically the intellectual capital that generates value and increases the performance of companies (Bueno, Salmador, & Merino, 2008). Human capital is the intangible non-separable resource par excellence, since it cannot be separated from its carrier, within the separable intangible resources, the following stand out: organizational capital, technological capital and reputation (Sanchez Medina et al., 2007).

THEORETICAL REVISION

Human capital

Human capital is defined as a generator of value and a source of innovation for the economic unit, from where the ideas of the organization are born (Marti, 2001). Within human capital three components can be distinguished within this dimension: competences, attitude and intellectual agility, creating in turn new knowledge or discovery that allow improving products or services through ideas (Roos, Bainbridge, & K., 2001). Assets centered on the individual include collective expertise, creative ability, problem solving skills, and leadership (Brooking, 1997a). It is important to note that not all workers pay creativity or new knowledge to the company, they should be considered exclusively those who are considered experts, that is, they are specialists and represent the elite of the labor payroll (Sveiby, 1998).

The human capital for this model evokes knowledge, regardless of its nature that people and groups possess, as well as the process to generate it. Human capital is managed with a strategic purpose paying significantly to the mission and vision of the organization. Knowledge is transmitted from person to person and in society is of vital importance to the organization in order to learn and share information that will benefit the economic unit. Values are actions, human attributes or conditions linked to the well-doing and development of man, in harmony with their environment, the main values highlight commitment, responsibility, tolerance, respect, search for truth and identity, freedom among others, Bueno et al. (2008) mentions that values and attitudes are a synergy of each person's being, being and willing.

The aptitude in the Intellectus model is synonymous with knowledge that people have to achieve a certain performance, highlighting the norms of behavior or organization, specialized knowledge, internally improved knowledge and of course experience is an aptitude that is obtained by the staff of the economic unit.

The capacity is known as the know-how, which refers to the set of skills, skills and talent that the person develops as a result of experience, learning is the ability to respond to the dynamics of change (Bueno et al., 2008), a capacity that every human being possesses the communication that is the capacity that every animated being has to relate to its environment. Human capital refers to the knowledge acquired by a person that increases their productivity and the value of their contribution to the economic unit, includes relationships with other employees, contacts, individual qualities, (Fernandez Sanchez, Montes Peon, & Vazquez Ordas, 1997).

Intellectual capital

The main objective of knowledge management is to evaluate the competences (knowledge, skills and attitudes) of human capital. It is a strategic tool in the decision making of an organization (Sarur, 2013). On the one hand, intellectual capital is defined as the combination of intangible assets that allow a company to function (Brooking, 1997b). The intellectual capital within a company represents beneficial results to the economic unit transferred to the financial capital, so that the financial accounting is transformed and adopts new concepts, consequently generating a competitive advantage in the market, that is, in correlation with the possession of knowledge, relations with clients, suppliers, experience, organizational technology, professional skills, etc. (Sarur, 2013).

The company Skandia, in 1991, proposes the Skandia value scheme, considering that the intellectual capital consists of: human capital and structural capital (Sarur, 2013). The Integral Control chart was developed by Kaplan and Norton in the year of 1996, applied in: AT & T, Eastman, Kodak, American Express and Taco Bell. These organizations have as individuals the operations with which they interact to develop businesses, such as employees, clients and investors, with a view to balanced markers (Sarur, 2013).

On the other hand, the main source of organizations' sustainable competitive advantage resides fundamentally in their intangible assets, reflected in their Intellectual Capital, (Bueno et al., 2008). Entrepreneurial activity receives particular attention among academics and public policy makers because it is linked, explicitly or implicitly, with economic growth and the general welfare of society (Salas-Fumas & Sanchez-Asin, 2010).

Intellectual model

In order to achieve a better understanding of intellectual capital, it is necessary to point out the different synonyms that refer to the capital in question, throughout the work of Lev B. of the year 2001 called Intangibles. Management, measurement and reporting, these synonyms are: intangible assets and knowledge assets.

Intellectual capital is the synergy of all the knowledge that employees possess that give the company a competitive advantage, and the collective of intangible assets can be identified and measured (Malhotra, 2000). Intellectual capital is based on knowledge, experience, skills, information systems, intellectual property, organizational structures, etc. (Robinson & Kleiner, 1996).

The intellectual capital is not only the brain talent of the employees, it also covers the brands, the name of the product, investments that have been made in the past, although they have not been revalued, the market has done so (Edvinsson & Malone, 1999). It is suggested that the intellectual capital of an economic unit be the sum of the knowledge of its members and the practical interpretation of the intangible asset (Roos et al., 2001).

The Intellectus model of measurement and management of intellectual capital was published in 2003 by Bueno et al. (2008), the structured capital to be measured in contrast to the different measurement models is divided by types of capital. Its publication was after the international publication of the Skandia model in 1992 by Edvinsson and Malone (1999). The aforementioned models in synchrony seek identification, definition of numerical indicators, establishment of management and design guidelines on the analysis of intangible assets and non-financial indicators.

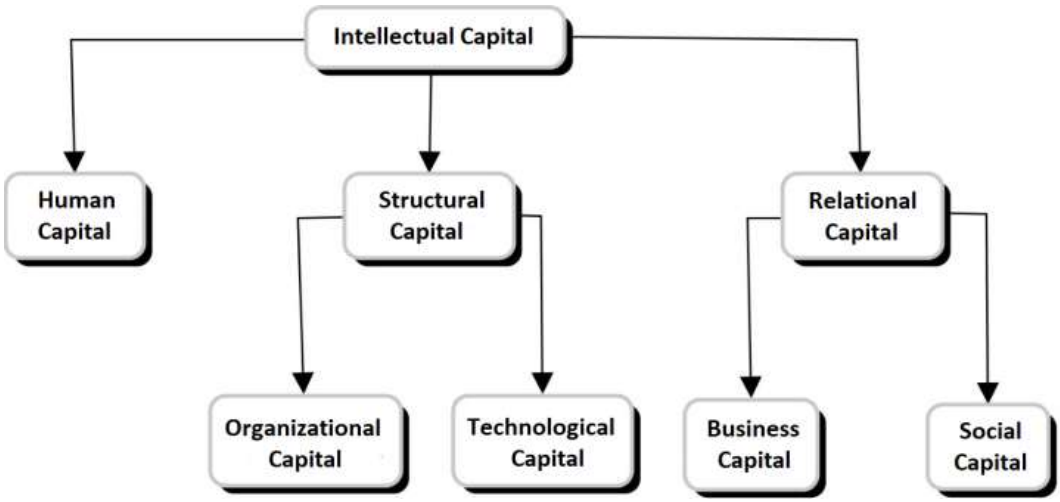

Figure 1. Intellectus model

In 2011 in Madrid, Spain the Intellectus model was updated with one of the objectives of improving the logical structure of the model, the new model according to Bueno is systemic, open, flexible, adaptive and dynamic, essentially presents five types of capital: Human capital, Organizational capital, Technological capital, Business capital and Social capital, is an open model since the economic unit interacts with its environment and is mainly dynamic, since the present value is directed to the business to reach an estimated future value.

RESEARCH METHODS

A survey was applied to 73 craft economic units, because the number of artisans is not known, simple random sampling will be used for convenience. The Intellectus model will be taken as a reference for measuring intellectual capital and each element of the capitals that make it up will be operationalized.

Table 2: Indicators and dimensions of human capital

Indicators	Dimensions
Values and attitudes (to be + be)	• Feeling of belonging and commitment • Self-motivation • Satisfaction • Sociability and customer orientation • Flexibility and adaptability • Creativity
Skills (know)	• Regulated education • Specialized training • Internal learning • Experience • Personal development
Capacities (know how)	• Learning • Collaboration (teamwork) • Communication (knowledge exchange) • Reconciling work and family life • Leadership

Using the Pearson chi-square technique using the SPSS program, the qualitative relationship between innovation and human capital was analyzed.

ANALYSIS

The Cronbach's Alpha statistic was performed in order to analyze the reliability of the information, obtaining 0.835 as Cronbach's Alpha index, therefore, it is interpreted that the results obtained have a good reliability. Calculated the value of significance (critical value observed) $0.001 < 0.05$ rejects the null hypothesis (the variables are independent) and accepts the alternative hypothesis, that is, human capital is significantly related to the capital of entrepreneurship and innovation at a level of 95% reliability.

Likewise, a linear regression was performed, to review only the signs of the explanatory variables and we obtained that: Feeling of belonging and commitment, Self-motivation, Satisfaction, Flexibility and adaptability, Personal development, Collaboration (teamwork) and Communication (exchange of knowledge), had a positive sign in their correlation coefficient, therefore qualitatively, it is inferred that the aforementioned aspects of artisanal economic units correlate positively with artisanal innovation.

Reliability statistics

The Cronbach alpha statistic was used, using the SPSS program, using the following formula:

$$\alpha = \frac{K}{K-1}\left[1 - \frac{\sum S_i^2}{S_t^2}\right] \tag{1}$$

Where:
K: It is the number of items
S_i^2: Variances of the items
S_t^2: Variances of the sum of the items
α: Cronbach's alpha coefficient

Table 3: Case processing summary

		N	%
Cases	Valid	73	100.0
	Excluded	0	.0
	Total	73	100.0

a. The elimination by list is based on all the variables of the procedure.

Chi-square statistics

The chi-square statistic was used, using the SPSS program, using the following formula:

$$x^2 = \sum \frac{(o_i - e_i)^2}{e_i} \tag{2}$$

Where:
o_i: Frequency observed
e_i: Expected frequency

Table 4: Summary of case processing chi-square test

	Valid		Lost		Total	
	N	Percentage	*N*	Percentage	*N*	Percentage
Human capital * Entrepreneurial capital	73	100.0%	0	0.0%	73	100.0%

Table 5: Chi-square test

	Valor	Gl	Signification asyntactic (bilateral)
Chi-square of Pearson	33.787[a]	12	.001
Reassembles	21.881	12	.039
Linear association by linear	11.488	1	.001
Valid cases	73		

A 16 boxes (80.0%) have expected a count less than 5. The expected minimum count is .04. Calculated the value of significance (critical value observed) 0.001 <0.05 rejects the null hypothesis (the variables are independent) and accepts the alternative hypothesis, that is, human capital is significantly related to the capital of entrepreneurship and innovation at a level of 95 Reliability.

Multiple linear regression

The Stata program, the linear regression command, was used to estimate the sign that would have had a synergy effect on artisanal innovation and the following results were obtained.

$$artisanal\,innovation = 0.13hum01 + 0.01hum02 + 0.05hum03 + 0.04hum04 + 0.03hum05 + 0.09hum06 + 0.019hum019$$

Where:
Hum01: Feeling of belonging and commitment
Hum02: Self-motivation
Hum03: Satisfaction
Hum04: Flexibility and adaptability
Hum05: Personal development
Hum06: Collaboration (teamwork)
Hum07: Communication (knowledge exchange)

CONCLUSION AND RECOMMENDATIONS

This research proposes to the artisan businesses a series of variables or aspects to be taken care of in the artisanal business with the aim of improving or expanding entrepreneurship and artisanal innovation. In turn, to be able to create a greater number of artisanal businesses, with a focus of artisanal innovation, which will allow to improve artisanal productivity and be able to continue encouraging the cultural value of artisan pieces, which will give rise to a greater economic and social development of the artisanal field.

Due to the high concentration of artisanal economic units existing in Jalisco, it becomes necessary and interesting to know and analyze the factors and alternatives that artisans have that can allow them to start new businesses and innovate in crafts through administrative strategies that pursue the objectives of each business.

Throughout this research the difference between handicraft and handicrafts was presumed, this difference refers to the object of study of this research, there are several models that measure and determine the intellectual capital in organizations, but the intellectus model was chosen thanks to its simplicity of understanding and operationalization of variables, the literature revealed that each of the capitals that make up the intellectual capital and in turn help to generate indicators that help the interpretation of results.

Based on the results previously exposed in the chapter on the analysis of results, the conclusions that responded to the objectives and responses of this research can be obtained, as well as the verification of the hypotheses proposed. Recalling that the purpose of this study is to generate contributions that encourage entrepreneurship and innovation in craft economic units.

This research was formulated the general objective of describing the impact that human capital has, that allows to create objectives in the economic unit for the correct management of its resources, through the analysis of a sample of national artisans and Tonaltecas. This with the purpose of to know those factors that allow the artisan businesses to generate entrepreneurship and active innovation within the same businesses, in order to promote a competitive advantage, for the achievement of the general objective it was necessary to know the influence of human capital in the development of craft businesses.

To fulfill the objectives outlined above, it was essential to formulate research questions that would allow identifying and analyzing the critical factors to promote entrepreneurship and artisan innovation, based on the specific objectives the following research question was posed: What is the relationship between human capital and innovation in national craft businesses and Tonaltecas?

Through the analysis of results, it is concluded that: The human capital of artisan businesses is positively related to craft entrepreneurship.

It is recalled that this research project sought to show the characteristics that positively influence entrepreneurship and craft innovation, but due to space and time limitations, each of the characteristics of the different capitals that make up the intellectual capital was not considered more in detail.

REFERENCES

Aimee, P. E. (2015). Business networks and strategy. the case of micro and small artisan companies in Tonala, Jalisco. In *Business strategies, industrial policy and competitiveness in SMEs.* Ciudad de Mexico, Mexico: Pearson.

Albaladejo, M., & Romijn, H. (2000). *Determinants of innovation capability in small UK firms: an empirical analysis* (Working paper # 0013). Eindhoven, Netherlands: Eindhoven Centre for Innovation Studies.

Atalay, M., Anafarta, N., & Sarvan, F. (2013). The relationship between innovation and firm performance: An empirical evidence from Turkish automotive supplier industry. *Procedia - Social and Behavioral Sciences*, *75*, 226–235. doi:https://doi.org/10.1016/j.sbspro.2013.04.026

Brooking, A. (1997a). *The intellectual capital.* Barcelona, Spain: Paidos Empresa.

Brooking, A. (1997b). The management of intellectual capital. *Long Range Planning*, *30*(3), 364-365.

Bueno, E., Salmador, M., & Merino, C. (2008, 01). Genesis, concept and development of intellectual capital in the knowledge economy: A reflection on the intellectus model and its applications. *Applied Economics Studies*, *26*, 43-64.

Edvinsson, L., & Malone, M. S. (1999). *Intellectual capital.* Barcelona, Spain: Gestion.

Fernandez Sanchez, E., Montes Peon, J. M., & Vazquez Ordas, C. J. (1997). The theory of competitive advantage based on resources: Synthesis and conceptual structure. *European Journal of Management and Business Economics*, *6*(3), 11-32.

Jones, B., & Grimshaw, D. (2012). *The effects of policies for training skills on improving innovation capabilitites in firms* (Nesta working paper no. 12/08). Manchester, UK: University of Manchester.

Khadan, J. (2018). *Estimating the effects of human capital constraints on innovation in the caribbean* (IDB-PB-274). Washington, DC, WA: Inter-American Development Bank.

Kim, Y.-H. (2002). A state of art review on the impact of technology on skill demand in OECD countries. *Journal of Education and Work*, *15*(1), 89–109. doi:https://doi.org/10.1080/13639080120106749

Kitdumrongthum, N., & Thechatakerng, P. (2018). Product innovations determinants of Chinese family business in Chiangmai and consumer socioeconomics. *International Journal of Business and Economic Affairs*, *3*(3), 141–146. doi:https://doi.org/10.24088/ijbea-2018-33005

Malhotra, Y. (2000). Knowledge assets in the global economy. *Journal of Global Information Management*, *8*(3), 5–15. doi:https://doi.org/10.4018/jgim.2000070101

Marti, J. M. V. (2001). ICBS - Intellectual Capital Benchmarking System. *Journal of Intellectual Capital*, *2*(2), 148–165. doi:https://doi.org/10.1108/14691930110385937

Miyatake, Y. (1996). Technology development and sustainable construction. *Journal of Management in Engineering*, *12*(4), 23–27. doi:https://doi.org/10.1061/(asce)0742-597x(1996)12:4(23)

National Fund for the Promotion of Handicrafts. (2016). *Manual of differentiation between crafts and crafts.* Mexico, DF: FONART.

National Institute of Statistic and Geography. (2018). *National statistical directory of economic units.* Retrieved from https://bit.ly/2XYJKDj

Organization for Economic Cooperation and Development. (2011). *Skills for innovation and research.* Paris, France: Organization for Economic Cooperation and Development.

Piyachat, B. (2017). The relationships among resources commitment reverse logistics innovation reverse logistics performance and reverse logistics cost savings: Manufacturing vs service industry. *Journal of Administrative and Business Studies*, *3*(3), 122-135. doi:https://doi.org/10.20474/jabs-3.3.2

Robinson, G., & Kleiner, B. H. (1996). How to measure an organization's intellectual capital. *Managerial Auditing Journal*, *11*(8), 36–39. doi:https://doi.org/10.1108/02686909610131675

Roos, G., Bainbridge, A., & K., J. (2001). Intellectual capital as a strategic tool. *Strategic & Leadership*, *29*(4), 21-26.

Salas-Fumas, & Sanchez-Asin. (2010). Quality of the entrepreneurial resource and productivity in Spain. In *The economic quarter.* Madrid, Spain: JSTOR.

Sanchez Medina, A., Melian Gonzalez, A., & Hormiga Perez, E. (2007). The concept of intellectual capital and its dimensions. *European Research on Business Management and Economics*, *13*(2), 97-111.

Sarur, Z. M. S. (2013). The importance of intellectual capital in organizations. *Administrative Science*, *1*, 39-45.

Sveiby, K. E. (1998). *Measuring intangibles and intellectual capital - an emerging first standard.* Retrieved from https://bit.ly/3gMoZnf

Toner, P. (2011). *Workforce skills and innovation: An overview of major themes in the literature* (OECD education working paper # 55). Paris, France: Organization for Economic Cooperation and Development.

Wasike, C. N. (2017). Financial regulation as moderating, influence of corporate governance, institutional quality, human capital and firm size on financial institutions performance in Kenya. *Journal of Administrative and Business Studies*, *3*(6), 292-304. doi:https://doi.org/10.20474/jabs-3.6.4