DOI: 10.31520/2616-7107/2019.3.4-2 ISSN 2616-7107

UDC 336.27
JEL: G33, G38, H0

INTELLECTUAL CAPITAL AND INNOVATION CULTURE: EVIDENCE FROM SMES PERFORMANCE IN INDONESIA

I Wayan Edi Arsawan
Doctor of Management Science,
Assistant Professor,
Department of Business Administration
Politeknik Negeri Bali
Badung, Indonesia
E-mail: wayanediarsawan@pnb.ac.id
orcid.org/0000-0001-8493-5249

Received: October, 2019
Accepted: December, 2019

DOI:10.31520/2616-7107/2019.3.4-2

Introduction Small and medium enterprises are largely dependent on producing revolutionary ideas to improve performance, innovation, and competitive advantage, but the delay in innovation often prevents SMEs from benefiting from making rapid and systematic innovations. To create a culture of innovation, it is necessary to map the intellectual capital. Mapping intellectual capital is needed as a systematic effort to optimize the role of knowledge in organizational sustainability.

Aims and tasks. This study investigates the relationship between intellectual capital, innovation culture and the performance of export SMEs. Conducted in a survey of 69 export SMEs in Bali, Indonesia. This research was conducted by survey method through the distribution of questionnaires with a semantic differential scale to 177 managers, supervisors and employees. The questionnaire distributed via offline by going directly to export SMEs in addition to conducting in-depth interviews.

Results. First, intellectual capital does not significantly influence the culture of innovation, where these results prove that SMEs must be responsive to market developments and not focus on the internal path. Second, the culture of innovation has a significant influence on the performance of SMEs, which proves that innovation is a trend in absorbing market share, especially in creating superior products, is difficult to emulate and has added value for customers. Third, intellectual capital has a significant effect on business performance. This proves that the important role of intellectual capital in improving the performance of SMEs.

Conclusions. The export-oriented SME sector has an increasing trend given the vast market share that can be targeted. But the role of intellectual capital must still get more portions because it has a significant effect on organizational performance. Although it does not yet have a significant influence on the culture of innovation, future research can become a preference that similar research needs to be done again to test these findings.

Key words: Business performance, intellectual capital, innovation culture, and SMEs

DOI: 10.31520/2616-7107/2019.3.4-2 *ISSN 2616-7107*

УДК 336.27
JEL: G33, G38, H0

ІНТЕЛЕКТУАЛЬНИЙ КАПІТАЛ І ІННОВАЦІЙНА КУЛЬТУРА: ДОКАЗИ ВІД ДІЯЛЬНОСТІ МАЛИХ ТА СЕРЕДНІХ ПІДПРИЄМСТВ В ІНДОНЕЗІЇ

Уайан Еді Арсаван
Доктор наук управління, доцент
Департамент ділового адміністрування,
Балійський державний політехнічний університет,
Бадунг, Індонезія
E-mail: wayanediarsawan@pnb.ac.id
orcid.org/0000-0001-8493-5249

Отримано: Жовтень, 2019
Прийнято: Грудень, 2019

DOI:10.31520/2616-7107/2019.3.4-2

Вступ. Малі та середні підприємства в значній мірі залежать від створення революційних ідей підвищення продуктивності, інновацій та конкурентних переваг, однак затримка в інноваціях часто позбавляє малі і середні підприємства (МСП) можливості здійснювати швидкі і систематичні інновації. Для створення культури інновацій необхідно нанесення на карту інтелектуального капіталу. Картографування інтелектуального капіталу доцільно як систематична спроба оптимізації ролі знань в організаційній сталості.

Мета і завдання. Це дослідження досліджує взаємозв'язок між інтелектуальним капіталом, інноваційною культурою та ефективністю експорту МСП. Проведено обстеження 69 експортних МСП на Балі (Індонезія). Це дослідження проводилося методом опитування через поширення опитувальників з семантичною диференціальною шкалою серед 177 менеджерів, супервайзерів і співробітників. Анкета поширювалася в автономному режимі шляхом прямого експорту МСП як додаток до проведення поглиблених інтерв'ю.

Результати. По-перше, результати доводять, що інтелектуальний капітал не здійснює істотного впливу на культуру інновацій, а МСП повинні реагувати на зміни ринку і не фокусуватися на внутрішньому шляху. По-друге, культура інновацій значно впливає на результати діяльності МСП. Це доводить, що інновації є тенденцією в поглинанні частки ринку, особливо в створенні геніальних продуктів, складному імітуванні і мають додаткову цінність для клієнтів. По-третє, інтелектуальний капітал має суттєвий вплив на ефективність бізнесу. Це доводить, що важлива роль інтелектуального капіталу в підвищенні ефективності діяльності МСП.

Висновки. Сектор МСП, орієнтований на експорт, має тенденцію до зростання, враховуючи величезну частку ринку, на яку можна орієнтуватися. Але роль інтелектуального капіталу все ще повинна збільшуватися, тому що це істотно впливає на ефективність організації. Хоча це ще не робить визначального впливу на культуру інновацій. У подальших дослідженнях необхідно провести аналогічні дослідження ще раз з метою перевірки отриманих результатів.

Ключові слова: ефективність бізнесу, інтелектуальний капітал, інноваційна культура, малі та середні підприємства.

Introduction. Physical assets such as land, capital, and labor are an important factor in creating corporate value in the industrial revolution, but, entering the industrial revolution 4.0 and society era 5.0, especially in global competition, organizational performance is more focused on the ability to develop intangible capital, which involves hidden assets or knowledge resources [1-2]. This means that the role of intangible assets such as knowledge and intellectual capital is very significant. Intellectual capital is a product of the human mind and can influence a significant benefit to innovation and the ability of organizational performance. Many researchers in previous studies have shown that intellectual capital is positively and significantly related to organizational performance [3-5].

The important role of managing knowledge assets is a competitive advantage, which is human capital and intellectual capital can produce sustainable innovation. This is evident from the role of innovation which is increasingly recognized as a major influence on the sustainable competitiveness of businesses, regions, cities, and countries [6], but the other side also produces conflicting demands, multiple pathways, and ambidexterity [7]. In the context of entrepreneurship, innovation is interpreted as value creation. Although innovation is widely regarded as part of the journey to achieve sustainable competitiveness, the role of knowledge in innovation capacity and performance still needs to be tested again.

To investigate variables related to intellectual capital, the culture of innovation and organizational performance of SMEs, this study aims to investigating the relationship of intellectual capital, innovation culture to SMEs' organizational performance and increase our understanding of the innovation process at a greater level. Specifically, one of the main objectives of this study is to explore the relationship between innovation culture, and intellectual capital, as well as to examine whether this category is related to organizational performance. From this perspective, this study argues that recognition of intellectual capital and innovation culture together contribute to corporate competitiveness, sustainability, and business performance.

Most researchers tend to focus on one problem, both intellectual capital [8], both only a few that offer a dual association of intellectual capital and performance, and a culture of innovation [9-11] or associations of organizational culture, performance and innovation culture [12]; [13].

Analysis recent research and publications. Galbraith (1969) who introduced the term intellectual capital has defined intellectual capital as a set of abilities that could potentially influence the future actions of the organization. On the other side, Stewart states the definition of "IC" as the sum of "everything people know that can provide a competitive advantage for the organization", that's why the concept of IC has been widely developed and modified [14]. This development involved a move from intellectual capital as a one-dimensional concept, (based largely on the concept of human capital), to the multi-dimensional concept such us human, structural, and relational capital, which together formed intellectual capital [15-18]. That's mean, in these three components, human capital (both individual and group knowledge of company employees) is a very important determinant of the company's innovation capacity [19; 20; 36].

In contrast, structural capital consists of knowledge assets that belong to companies. Structural capital has diverse components, namely organizational, process and innovation capital. The relationship with customers is very important, so the employees must convert that IC is basic knowledge to commercial value in winning the market, [21]. This represents a unique value of intellectual capital known as "customer capital" or "relational capital", which includes elements such as supplier relationships and customer connections, licenses, and franchises. All organizations have intellectual capital in all three manifestations but to varying degrees.

According to Hofstede [22], innovation culture is activities to shared values, beliefs, and perceptions of organizational members that can facilitate the innovation process.

Innovativeness describes a company's tendency to introduce new mechanisms, processes, products, or ideas [23]. This is an aspect of culture, which influences companies to innovate [24].

Recent research on the role of innovation-oriented organizational culture in enhancing innovation shows how culture can positively influence performance [25-28].

This orientation toward "innovation culture" is far more prominent in developed countries than in developing countries. As mentioned earlier, research and development during the socialist period are usually independent of the industrial sector. Major reorientation is the main task, not least because the role of government has fundamentally changed from "entrepreneurship" to the facilitator and regulator of private companies. Other factors include lack of business for innovation, deficiencies in the protection of intellectual property rights, dissemination and implementing of university research results and knowledge transfer from the other organization.

Certain microenvironments at the company level can restrain or facilitate IC development, innovation, and influence organizational performance. This social and cultural determinant of the dynamics of innovation has been supported by radical changes in the concept of innovation in the innovation paradigm [29] in the 1990s, which shifted the concept of innovation from its technical and technological neoclassical nature toward complex social phenomena. The concept of innovation and national innovation capacity [30] evolved into a process that is embedded in a broader institutional context, which involves socio-cultural and political factors in which innovation is contextual, path-dependent, locally specific, and institutionally shaped.

Innovation then develops into a hybrid process, not only held back at the macro level including the wider socio-economic environment but will also be understood as a certain type of mindset, which requires a specific microenvironment at the corporate level that fosters creativity. and innovation.

Business performance is a subjective measure. However, organizational performance can be measured using profit rates, investment returns, customer maintenance levels, and sales growth. [31; 37] revealed that business performance can be measured based on customer satisfaction with the products offered in the last three years and the quality of business work carried out.

Measuring business performance based on business efficiency, market growth and ability to make a profit. On a general scale, organizational performance can be measured in terms of asset returns, return on equity, net growth rates, and return on sales, while efficiency and effectiveness are also a measure of organizational performance.

H1: intellectual capital has a significant positive effect on the culture of innovation

H2: innovation culture has a significant positive effect on business performance

H3: Intellectual capital has a significant positive effect on business performance.

The main source of data is the survey method conducted in the SME sector which has export-oriented activities and has an international share. The total population is 69 and the determination of the frame sample is 54. The determination of the sample is proportional random sampling which is then distributed to 177 respondents from three levels namely managers, supervisors and employees. The questionnaire was measured with a semantic differential scale 1-7 distributed for 4 months. The first questionnaire was tested on the first 30 respondents to test its validity and reliability, after which it was distributed to all respondents.

Aim and tasks. This study investigates the relationship between intellectual capital, innovation culture and the performance of export SMEs.

Results. This research provides the results of the relationship between components of intellectual capital, and the influence of these factors on the culture of innovation and business performance. This paper is organized as follows: after introduction, a theoretical framework along with hypotheses and key concepts relating to research. The third part explains the methodology and research data. In the last section, we discuss the results, contributions, and limitations of this paper, as well as suggestions for future research.

Based on the concept of reliability measurement, this study uses three measuring instrument methods namely convergent validity, discriminant validity, and composite reliability.

Convergent validity is used to measure the validity of an indicator as a measure of a construct that can be indicated by the value of the outer loading factor. In studies that are in the early stages of developing measurement scales or called exploratory research the loading factor value 0.50-0.60 is still considered sufficient [32]. In this study, using an outer loading value above 0.60.

Discriminant validity testing to measure the validity of an indicator in a variable can be done by another method that compares the square root coefficient of variance extracted (√AVE) for each latent variable with the correlation coefficient between the other latent variables in the model. The recommended AVE value is greater than 0.50. The root value of AVE for each variable is greater than the comparison variable. This indicates that the indicators that reflect the dimensions of the variables in this study have good discriminant validity.

Composite reliability is a measure of the reliability value between the indicators of the variables in which Cronbach alpha has values> 0.70. The results of the analysis of composite reliability values ranged from 0.864 to 0.985 greater than 0.70 which reflects the dimensions of the variable are reliable. Likewise, the Cronbach alpha value shows ranging from 0.710 to 0.978 greater than 0.70 that is means the indicators declared free from the problem of random error [33-34].

Inner Model Measurement. The research hypothesis testing was conducted by evaluating the feasibility of the model through the results of the R2 analysis using the predictor relevance method of Stone Geiser (Stone, 1974 & Geiser, 1971) and Goodness of Fit (GoF).

Inner Model Measurement. The research hypothesis testing was conducted by evaluating the feasibility of the model through the results of the R2 analysis using the predictor relevance method of Stone Geiser (Stone, 1974 & Geiser, 1971) and Goodness of Fit (GoF).

Q^2 and GoF calculations use the R-square coefficient (R^2) which shows the strength of the weak information generated by exogenous variables to endogenous variables so that R^2 can show the strength or weakness of a research model. [32] R^2 value of 0.67 is strong, 0.33 is moderate and 0.19 is weak.

Table 1. R^2 and R^2 Adjusted

Variables	Results		
	R^2	R^2 Adjusted	Remarks
Intellectual Capital (X)	0.715	0.713	Positive
Innovation Culture(Y1)	0.779	0.777	Positive
Business Performance (Y2)	0.827	0.822	Positive
Average	0.774	0.771	Positive

Sample of a Table footnote. (*Table footnote*)

Based on the table above, the intellectual capital R^2 value is 0.715, the innovation culture is 0.779, the business performance is 0.827, and the R^2 value is classified as a strong model because it is above 0.67. The average value of 0.774 means that the relationship model between constructs is explained by 77.4 percent, while the remaining 22.6 percent is explained by other variations outside the model. The distribution of the adjusted R^2 value is smaller than the distribution of the R^2 value meaning that a change or expansion of the research model by including other latent variables is still possible [35]. The next step is to measure Q Square Predictive Relevance (Q^2), namely how well the observations produced by the research model. Q^2 has a range of values ranging from 0 to 1. The closer to 1 means that the model can predict the better [38]. The Q^2 value is calculated by the formula:

$$Q^2 = 1 - [(1 - R^2y_1) \cdot (1 - R^2y_2) \cdot (1 - R^2y_3)]$$
$$Q^2 = 1 - [(1 - 0.715) \cdot (1 - 0.779) \cdot (1 - 0.827)]$$
$$Q^2 = 1 - [(0.285) \cdot (0.221) \cdot (0.173)]$$
$$Q^2 = 1 - [0.01089]$$
$$Q^2 = 0.98911 \ (Q^2 \text{ predictive relevance is very good})$$

Q^2 calculation results show the value of 0.98911 which means the model shows a very good observation that is 98.91% the relationship between variables can be explained by the model while the remaining 0.103% is a factor of error or other factors not included in the research model. The next step is to validate the model as a whole with the following calculation.

$$\text{GoF} = \sqrt{com \cdot R^2} = \sqrt{0.683 \cdot 0.774} = \sqrt{0.50529} = 0.727$$

GoF calculation results show a value of 0.727 which is close to 1 (one) means including a predictive model that is very fit, this indicates that the accuracy of the overall model measurement is very good. This is based on criteria regarding the value of GoF according to Ghozali and Lathan (2015) including 0.10 (GoF small), 0.25 (GoF Moderate) and 0.36 (GoF large), so the research model is categorized as GoF Large.

The final step is to test the effect size (f^2) to provide more detailed information about the variation of values that can be explained by a group of independent variables on the dependent variable in a structural equation system (Cohen, 1998). The criteria for effect size (f^2) are 0.02-0.15 (weak impact), 0.15 - 0.35 (medium impact) and> 0.35 (strong impact). If the f^2 value is in the range of 0.02 then the research model is said to be classified as weak, the f^2 value in the range of 0.15 is stated to have a moderate effect and the f^2 value in the range of 0.35 or more is classified as a strong effect [32].

Table 2. Cohen Effect Size

Variables	Results				
	Original *Sample (O)*	Sample *Mean (M)*	*Standard Deviation (STDEV)*	*T Statistics (|O/STDEV|)*	*P Values*
IC -> BP	0.187	0.207	0.107	1.810	0.077
Mean	0.187	0.207	0.107	1.810	0.077

Sample of a Table footnote. (*Table footnote*)

The results of the analysis as shown in the table above with a mean of 0.187 can be concluded that there is a weak indication of the formation of a mediating relationship pattern in this study.

Hypothesis testing in this study was carried out through two stages namely testing the direct effect and testing the indirect effect of exogenous variables on endogenous variables.

Table 3. Coefficient among variables

Construct	**Results**					
	OS	***SM***	***SD***	***TS***	***PV***	***R***
IC -> INC	0.139	0.116	0.079	1.759	0.079	Not Support
INC -> BP	0.536	0.511	0.092	5.817	0.000	Support
IC -> BP	0.459	0.455	0.090	5.104	0.000	Support

Sample of a Table footnote. (*Table footnote*)

The analysis showed that intellectual capital had no significant effect on the culture of innovation with a coefficient of 0.139 and t statistics of 1.759 so that hypothesis 1 was rejected as well as refuting the results of the research [9-11]. The relationship of innovation culture with business performance is significant with a coefficient of 0.536 and statistics 5.817 which means hypothesis 2 is accepted and in line with the results of the study [12-13], while the relationship between intellectual capital and business performance is significant with a coefficient of 0.459 with t statistics 5.104 which means hypothesis 3 is accepted so that it is in line with the research conducted [3-5].

After knowing the direct relationship between variables, the next step in SEM is to test the indirect relationship through the role of mediation.

Table 4. Mediation coefficients

	Mediation Test				
	Model	***path***	***t-stat***	***T table***	***remarks***
a	IC→ INC	0.139	1.759	> 1,96	No Mediation
b	INC→BP	0.536	5.817	> 1,96	
c	IC→BP	0.459	5.104	> 1,96	

Sample of a Table footnote. (*Table footnote*)

In the table above there is a pattern of mediation relationships that are statistically tested and do not meet the conditions for mediation. This means that there is no role of the mediator variable that plays a strategic function in strengthening the dependent variable. Uninterrupted mediation patterns prove that a direct relationship between variables does not require an intermediary relationship.

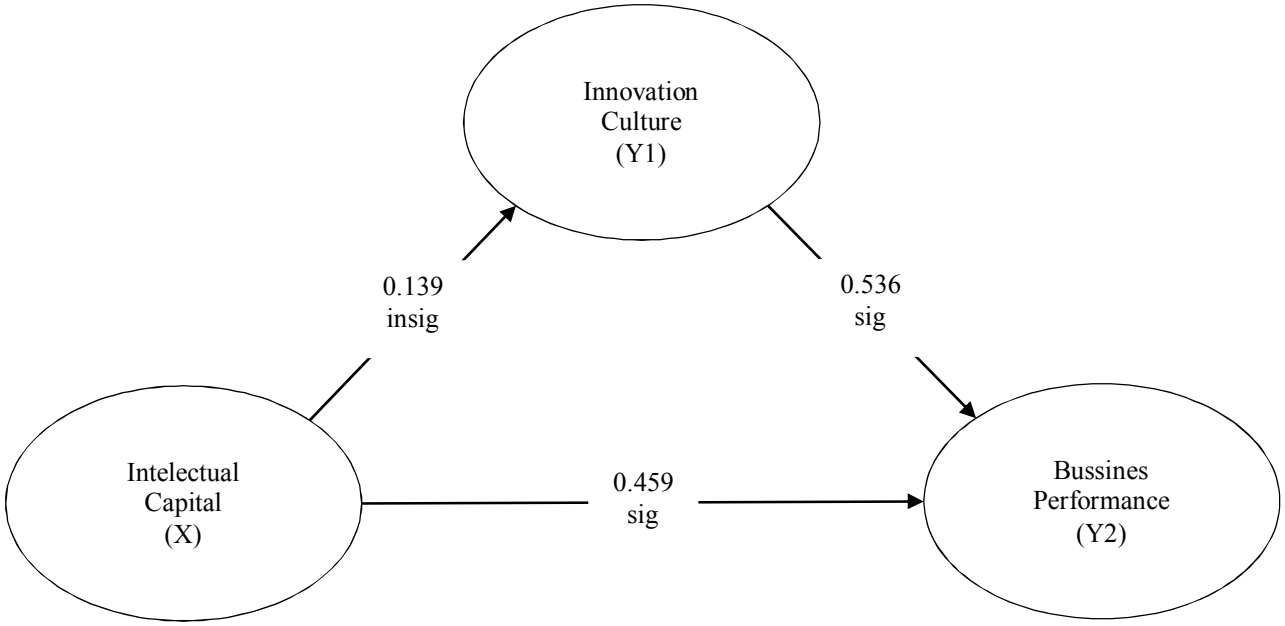

Fig. 1. Research Model Analysis

Conclusions. This study provides insight into the relationship between variables, especially the role of intellectual capital that does not significantly influence the culture of innovation. This is because SMEs Export products already have special specifications from the destination country. Innovation is difficult because rules and legalities are formed so that innovation is very difficult. The role of intellectual capital is not so significant because the product, marketing of SMEs Exports is already set in ISO. In export-oriented SMEs, product innovation and process innovation are actually very important because of the intense competition in penetrating foreign markets. products must have competitive advantages, have added value and are unique, but on the other hand, foreign markets are also very strict in applying specifications according to international standards. The results of this study produce a contradiction that the culture of innovation is not influenced by intellectual capital even though the source of innovation is knowledge.

Theoretically, the results of this study need to be tested again on other SMEs, especially SMEs with innovation in products, processes and work innovations. This study has limitations in the relatively small sample frame, carried out in the growing SMEs sector and does not yet see intellectual capital as the main asset of the organization. Future research can be carried out in the higher education sector or companies in the IT sector by adding organizational learning and knowledge hiding variables.

REFERENCES

1. Subramaniam, M. & Youndt, M.A. (2005). The influence of intellectual capital of the types of innovative capabilities. *Academy of Management,* 48(3), 450–463.

2. González-Loureiro, M. & Pita Castelo, J. (2012). A model for assessing the contribution of innovative SMEs to economic growth: the intangible approach. *Economics Letters*, 116 (3), 312–315.

3. Ashkanasy, N.M., Wilderom, C.P.M. & Peterson, M.F. (2011). The Handbook of Organizational Culture and Climate, 2nd ed., Sage, Thousand Oaks, CA.

4. Khalique, M., Bontis, N., Shaari, J.A.N.B., Yaacob, M.R. & Ngah, R. (2018). Intellectual capital and organizational performance in Malaysian knowledge-intensive SMEs. *International Journal of Learning and Intellectual Capital*, 15(1), 20–36.

5. Agostini, L. & Nosella, A. (2017). Enhancing radical innovation performance through intellectual capital components. *Journal of Intellectual Capital*, 18, 789–806.

6. Asheim, B.T., Lawton Smith, H. & Oughton, C. (2011). Regional innovation systems: theory, empirics and policy. *Regional Studies*, 45, 875–891

7. Bledow, R., Frese, M., Anderson, N., Erez, M. & Farr, J. (2009). A dialectic perspective on innovation: Conflicting demands, multiple pathways, and ambidexterity. *Industrial and Organizational Psychology*, 2(3), 305–337

8. Gläser, D., van Gils, S., & Van Quaquebeke, N. (2017). Pay-for-performance and interpersonal deviance: competitiveness as the match that lights the fire. *Journal of Personnel Psychology*, 16, 77–90.

9. Schneider, B., González-Roma, V., Ostroff, C. & West, M.A. (2017). Organizational Climate and culture: Reflections on the history of constructs in the Journal of Applied Psychology. *Journal of Applied Psychology*, 102, 468–482.

10. Chatzoglou, P. & Chatzoudes, D. (2018). The role of innovation in building competitive advantages: an empirical investigation. *European Journal of Innovation Management*, 21(1), 44–69.

11. Dávila, G.A., Durst, S. & Varvakis, G. (2018). Knowledge absorptive capacity, innovation, and firm's performance: insights from the South of Brazil. *International Journal of Innovation Management*, 22(2), 1–34.

12. Shanker, R., Bhanugopan, R., Van der Heijden, B.I. & Farrell, M. (2017). Organizational climate for innovation and organizational performance: the mediating effect of innovative work behavior. *Journal of Vocational Behavior*, 100, 67–77.

13. Kraśnicka, T., Głód, W. and Wronka-Pośpiech, M. (2018). Management innovation, pro-innovation organizational culture and enterprise performance: testing the mediation effect. *Review of Managerial Science*, 12(3), 737–769.

14. Stewart, T.A. (1997). Intellectual Capital: The New Wealth of Organizations, Doubleday, New York, NY.

15. Edvinsson, L. & Malone, M.S. (1997). Intellectual Capital: Realizing Your Company's True Value by Finding its Hidden Brainpower, Harper Business, New York, NY.

16. Kujansivu, P. (2005). Intellectual capital performance in Finnish companies. *Paper presented at 3rd Conference on PerformanceMeasurement and Management Control,* 22–23, 1–14.

17. Montequín, V.R., Fernández, V.A., Cabal, V.A. & Gutierrez, N.R. (2006). An integrated framework for intellectual capital measurement and knowledge management implementation in small and medium-sized enterprises. *Journal of Information Science*, 32(6), 525–538.

18. Santos-Rodrigues, H., Figueroa-Dorrego, P. & Fernandez-Jardon, C.M. (2011). The main intellectual capital components that are relevant to the product, process, and management firm innovativeness. *International Journal of Transitions and Innovation Systems*, 1(3), 271–301.

19. Mariz-Perez, R.M., Teijeiro-Alvarez, M.M. & Garcia-Alvarez, M.T. (2012). The relevance of human capital as a driver for innovation. *Cuadernos de economía,* 35(98), 68–76.

20. Dakhli, M. & De Clercq, D. (2004). Human capital, social capital, and innovation: a multi-country study. *Entrepreneurship & Regional Development*, 16(2), 107–128.

21. Tseng, S.M. (2009). A study on the customer, supplier, and competitor knowledge using

the knowledge chain model. *International Journal of Information Management*, 29, 488–496.

22. Hofstede, G. (1980), Culture's Consequences, Sage Publications, Newbury Park, CA.

23. Hult, G.T.M., Hurley, R.F. & Knight, G.A. (2004), "Innovativeness: Its antecedents and impact on business performance. *Industrial Marketing Management*, 33, 429–438.

24. Kyrgidou, L.P. & Spyropoulou, S. (2013). Drivers and performance outcomes of innovativeness: an empirical study. British Journal of Management, 24(3), 281–298.

25. Lewin, A.Y. & Kim, J. (2004). The nation-state and culture as influences on organizational change and innovation. In Poole, M.S. and van de Ven, A.H. (Eds), Handbook of Organizational Change and Innovation, Oxford University Press, Oxford..

26. Acar, A.Z. & Acar, P. (2012). The effects of organizational culture and innovativeness on business performance in the healthcare industry. *Procedia – Social and Behavioural Sciences,* 58, 683–692. Retrieved from www.sciencedirect.com/science/article/pii/S1877042812045089.

27. Kraus, S., Rigtering, J.C., Hughes, M. & Hosman, V. (2012). Entrepreneurial orientation and the business performance of SMEs: a quantitative study from the Netherlands. *Review of Managerial Science*, 6, 161–182.

28. Stock, R.M., Six, B. & Zacharias, N.A. (2013). Linking multiple layers of innovation-oriented corporate culture, product program innovativeness, and business performance: a contingency approach. *Journal of the Academy of Marketing Science,* 41, 283–299.

29. Mytelka, L.K., & Smith, K. (2002). Policy learning and innovation theory: an interactive and co-evolving process. *Research Policy,* 31 Nos 8/9. 1467–1479.

30. Furman, J.L., Porter, M.E. & Stern, S. (2002). The determinants of national innovative capacity. *Research Policy*, 31, 899–933.

31. Tippins, M. J., & Sohi, R. S. (2003). IT competency and firm performance: is organizational learning a missing link?. *Strategic management journal*, 24(8), 745–761.

32. Chin, W.W. (2010). How to Write Up and Report PLS Analysis. In V. Esposito Vinzi, W.W Chin., J Henseler H. Wang (Eds), *Handbook of Partial Least Squares: Concepts, Methods, and Applications in Marketing and Related Fields*. 655–690. Berlin: Springer.

33. MacKenzie, S.B., Podsakof, P.M., & Podsakof, N.P. (2011). Construct Measurement and Validation Procedures in MIS and Behavioral Research: Integrating New Existing techniques. *MIS Quarterly*. 35(2), 293–334.

34. Singleton, R., & Straits, B. (2010). *Approach to Social Research* (5th Edition). New York, NY: Oxford University Press.

35. Hair J.F., Ringle, C.M., & Sarstedt, M. (2011). PLS-SEM: Indeed a Silver Bullet. *The Journal of Marketing Theory and Practice*, 19(2), 139–152.

36. Bodnar, S., Mirkovich, I., & Koval, V. (2019). Human capital development in Ukrainian education system by means of language integrated teaching. *Dilemas contemporaneos-educacion politica y valores*, 7 (SI), 14.

37. Koval, V., Duginets, G., Plekhanova, O., Antonov, A., & Petrova, M. (2019). On the supranational and national level of global value chain management. *Entrepreneurship and Sustainability Issues*, 6(4), 1922-1937. http://doi.org/10.9770/jesi.2019.6.4(27)

38. Stone, M. (1974). Cross-Validatory Choice and Assesment of Statistical Predictions. *Journal of the Royal Statistical Society. Series B (Methodological)*, 36(2), 111–147.