International Seminar of Research Month
Science and Technology for People Empowerment
Volume 2018

NST PROCEEDINGS

OPEN ACCESS

Conference Paper

Mapping of Spider Plot Diagram in Intellectual Capital Measurement in Creative Industries

[1] G. Sukarno*, [2] W. R. Wigati, [3] S. Irbayuni, [3] M.A.T. Fitriyah

[1] Department of Management, Faculty of Economics and Business, Universitas Pembangunan Nasional "Veteran" Surabaya, East Java, Indonesia
[2] Language Center and Office International Affair, Universitas Pembangunan Nasional "Veteran" Surabaya, East Java, Indonesia
[3] Department of Law, Faculty of Law, Universitas Pembangunan Nasional "Veteran" Surabaya, East Java, Indonesia

Abstract

In the context of global competition, competition not only occurs in the world of industry and trade but also applies to creative businesses or more specifically creative industries which are industries that come from the utilization of individual skills, creativity, and talent in creating welfare and employment use. Problems in managing SMEs and creative industries that have not been resolved are intellectual capital issues. One approach used in the assessment and measurement of knowledge assets (intellectual property/assets) is Intellectual Capital which consists of 3 main elements, namely Human Capital, Structural Capital, and Relational Capital. Creative industries are industries that are unique and emphasize creativity, innovation, and utilization of individual talents need to get maximum management. The purpose of this study is to find a model, the appropriate components of intellectual capital, and to get a real picture of the rules of Human Capital; Structural Capital and Relational Capital for creative industries in East Java. The sample in this study is the owner/manager/ leader of 5 creative industry sub-sectors in 9 cities in East Java (Surabaya, Pasuruan, Probolinggo, Mojokerto, Batu, Malang, Kediri, Blitar, and Madiun) with a sample of 45 as respondents. The analysis technique used in this study is the Spider Plot Diagram. Based on the results of the survey and studies, the aspect of mapping of intellectual capital in 5 (five) creative industry sub-sectors in East Java shows that relational capital is more dominant followed by human capital, and the lowest is structural capital.

Keywords: Creative industries, intellectual capital, human capital, relational capital, structural capital

INTRODUCTION

The presence of competition in the ASEAN Economic Community (MEA) is difficult to avoid. Indonesia must start preparing itself if Indonesia does not wish to be an easy target for the entry of products from ASEAN member countries into the country. The era of the ASEAN Economic Community (AEC) which began in 2015 brings an opportunity as well as a challenge for the Indonesian economy. With the enactment of the AEC at the end of 2015, ASEAN member countries will experience a free flow of goods, services, investment and educated labor from and to each country.

Through MEA there will be integration in the form of "free trade area" (free trade area), the elimination of trade tariffs between ASEAN countries, as well as the free labor market and capital market, will greatly affect the economic

* Corresponding author
Email address: sukarnogendut@yahoo.co.id

How to cite this article: Sukarno G, Wigati WR, Irbayuni S, Fitriyah MAT (2018) Mapping of Spider Plot Diagram in Intellectual Capital Measurement in Creative Indutries. *International Seminar of Research Month Science and Technology for People Empowerment*. NST Proceedings. pages 384-392.doi: 10.11594/nstp.2019.0251.

growth and development of each country. To face the free market era in Southeast Asia, businesses must take strategic steps in order to face competition from other ASEAN countries, including the creative industry sector.

In this regard, the Government has issued Presidential Instruction Number 6 of 2009 concerning the Development of Creative Economy as a basis for all stakeholders in developing 14 creative economic sectors. The creative industry sub-sectors: Advertising, Architecture, Art and Antiques Market, Crafts, Design, Fashion, Video-Film and Photography, Interactive Games, Music, Performing Arts, Publishing and Printing, Computer and Software, Television and Radio, Research and Development. The creative industry that has been proclaimed by the Ministry of Tourism and Creative Economy which consists of 14 fields, Fashion and Crafts is the dominant sub-sector in making economic contributions. Both types of industries have become locomotives in the development of the national creative industry. "The contribution of fashion and craft far outperforms the contribution of other small industry types. Both in added value, labor in the number of companies, and in exports, "(Director General of Small and Medium Industries in the opening of the fashion and craft exhibition themed" Indonesia arid Craft 2013 "in Jakarta, Thursday [27/6].

Of the 14 sectors, the added value generated by the fashion and craft sub-sector is quite dominant, respectively 43.02% and 25.12% of the total contribution of the creative industry sector.

However, some of the creative industry sub-sectors have very low contribution, namely the sub-sector: Performing arts (0.10%); Interactive game (0.37%); Markets and art goods (0.45%); Film, video, photographic (0.60%); Research & development (0.72%). Related to the follow-up, the preparation of national cooperatives and SMEs to face the MEA era is good enough "So far our Cooperative and SME preparation to face the MEA 2015 era is quite good. One of the main obstacles for the Cooperative and Creative SME (creative industries) sector to compete in the free market era is the quality of human resources (HR) of Cooperatives and SME actors who are generally still low (Minister of Cooperatives and SMEs Syarief Hasan). In relation to the increasingly tight business competition, the creative industry in Indonesia must interpret that organizational competitiveness can be achieved by managing its potential human resources (employees). Human resources can be used as a source of sustainable competitive advantage and not easily replicated by competitors because competitive success gained from effective human resources management is not as transparent as managing other human resources.

A number of parties also considered that until now, the government does not have a comprehensive policy to deal with the AEC that has been running for 1 year. In fact, other countries such as Malaysia, Singapore, and Thailand already have specific strategies so that their countries can take optimal advantage in the ASEAN free market.

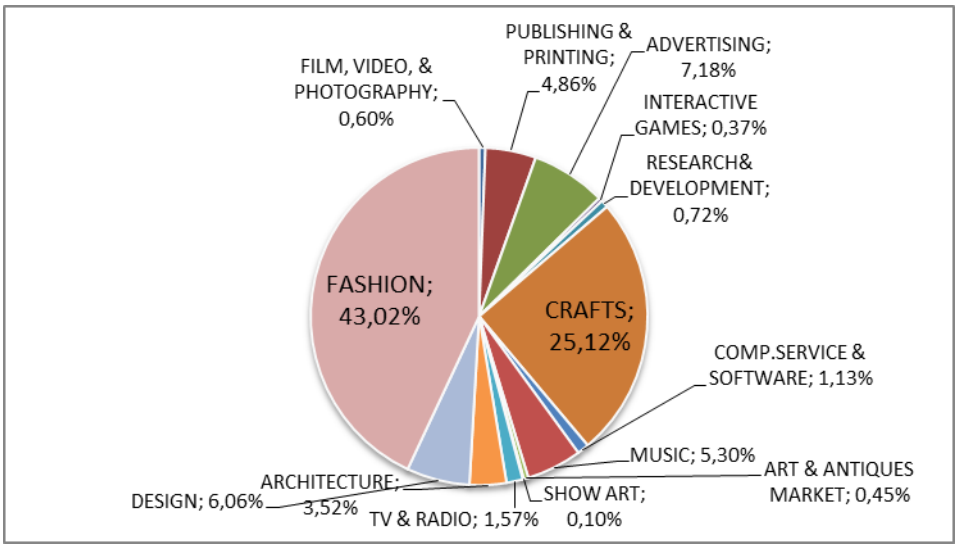

Figure 1. The Average Percentage of Creative Industry Subsector 's Contribution to The Creative Industry (2010-2015)

Entering the AEC in 2017, Indonesia does not seem to have been able to prepare properly related to the improvement of Human Capital (is one component of Intellectual Capital). This can be seen in the Human Development Index (HDI) 2013 indicator, released by UNDP (United Nations Development Program), Transparency International's Corruption Perceptions Index (CPI) 2013 and the Global Competitiveness Index (GCI) 2013–2014 issued by the World Economic Forum (WEF).

In terms of the strength of human capital, Indonesia is still lagging behind some neighboring countries. Indonesia's HDI figure is still low, which is only 0.62 and in is a group of countries with medium human development index category.

The HDI is still far below Singapore (0.89) and Brunei (0.85) which are able to perform very well in the group of countries with HDI in the very high human development category. Malaysia is also quite far above Indonesia with HDI of 0.76 and belongs to the category of high human development countries.

One approach that is needed by SMEs (including creative industries) in facing business competition is the Intellectual Capital (IC) approach consisting of Human Capital (HC), Structural / Organizational Capital (OC), and Relational / External Capital (EC), and be the main determinant of the success of SMEs (Loureiro and Pedro, 2012).

The reference of Intellectual Capital's role in supporting the performance of creative industries is reinforced by research conducted by Santos Helena et.al (2011) entitled "System of Innovation and innovative SMEs: A Model to Measure the Intellectual Capital of SMEs". The sample in this study was Small and Medium Enterprises (SMEs) totaling 140 SMEs in Spain, with SEM (Structural Equation Model) analysis techniques. Research results show that Human Capital which is an Intellectual Capital dimension is able to contribute to the Commulative Growth Rate of SMEs in Spain. Other research findings by Huang and Hsueh (2007) "A Study on the Relationship Between Intellectual Capital and Business Performance: A Path Analysis". The combination of capability, competence, satisfaction, employee sustainability will create human capital productivity. The research produced Human Capital findings which are the dimensions of Intellectual Capital that are positively related to Business Performance. Similarly, the research by Purwanto (2015), Research by Sharabati, et al (2010), shows that the variables of Intellectual Capital (Intellectual Capital including Human Capital) have a significant and positive influence with Business Performance (BP). Similarly with the research of Mouritsen (1998) which states that there is a positive relationship between Intellectual Capital and enterprise performance. Cabrita and Bontis (2007) also stated the same results that each variable of Intellectual Capital (Human Capital, Structural Capital, and Relational Capital) interacts with Business Performance.

Regarding the research theme of Intellectual Capital, the research conducted by the research team was conducted by Sukarno (2013) on The Growth of Fashion Creative Industry Through Human Capital and Institutional Change, the findings produced were that Intellectual Capital (in Human Capital focus) contributed to performance industry. In terms of the strength of human capital, Indonesia is still lagging behind some neighboring countries. The existence of human capital in Indonesia is indeed concerning. This is reflected as follows: Indonesia's HDI figure is still relatively low, which is only 0.62 and is in a group of countries with the medium human development HDI category. The HDI is still far below Singapore (0.89) and Brunei (0.85) which are able to appear very advanced in the group of countries with HDI in the category of very high human development (Sukarno, 2016). In line with this, according to Sukarno and Sawitri (2014) in The Human Capital And The Institutional Changes of the Trio of Creative Industries ABG In Fashion, the finding produced is Human Capital which has a significant contribution to the performance of the creative industry.

Some of the things that are specific objectives in this study include: This study aims to find out components of intellectual capital those are appropriate for creative industries in East Java. Besides, this research aims to get a real picture of the rules of Human Capital; Structural Capital and Relational Capital creative industries in East Java.

As for the benefits and contribution of the results, it is hoped that new findings can be obtained in relation to intellectual capital (intellectual capital) which includes human capital; structural capital and relational capital (HC, SC, RC) those are applied to creative industries in East Java, so that they can be used to prepare renewable models in

the management of creative SMEs that support applied research. Empirically, this research is useful in explaining the role of Intellectual Capital Statement in creative SMEs, namely creative industries in East Java. This research is expected to contribute to the management literature on the development of theories related to the role of human capital, structural capital, and relational capital in evaluating the intellectual capital statement.

METHODS

Research Sites

The location of this study is in East Java with the city target (DH Municipality), so that there are 9 cities, namely: Surabaya, Pasuruan, Probolinggo, Malang, Batu, Mojokerto, Kediri, Blitar, and Madiun. Consideration of choosing the area because in reality the creative industry mostly develops in the city of Metropolis, provinces to cities that support creative industry activities that require a lot of information, technology, creativity, innovation.

Population and Research Sample

The population in this study are all sub-sectors (14 sectors) of creative industries in East Java. The sample in this study is that the owner/leader/ manager of the 5 creative industry sub-sectors that have a very poor contribution. The sub-sectors are: performing arts; Interactive game; Markets and art goods; Film, video, photographic; Research & development in 9 cities in East Java as many as 45 respondents as samples.

Analysis Technique

The analysis technique in this study uses Descriptive analysis and analysis of Spider Plot Diagrams (radar graphs). Spider plot diagrams are graphical methods displaying multivariate data in the form of two-dimensional graphs of three or more quantitative variables represented by axes starting from the same point. However, because this research is a grant from the Directorate of Research and Community Service of Ministry of Research, Technology, and Higher Education Program in Higher Education Advanced Applied Research which is still in process, the technical analysis used is still using Descriptive analysis techniques.

RESULT AND DISCUSSION

Intellectual Capital Description

Intellectual Capital, the measurement of this variable refers to the dimensions proposed by Stewart (1997), which consists of three main elements, namely: a. Human capital, with indicators: Attitude, competencies, education, knowledge, and skills. Whereas dimension: b. Structural capital, with indicators: copyright, corporate culture, design rights, financial relations, information technology infrastructure, management processes, service marks, trade secrets, and trademarks. The dimension: c. Customer capital with indicators: brand, company name, customers, distribution channels, franchise agreements, agreements, and loyalty. The complete data can be seen in the following table 1.

Table 1. Intellectual Capital

	INDICATOR	SCORE										Mean (X)
		(1) STS		(2) TS		(3) N		(4) S		(5) SS		
		F	%	F	%	F	%	F	%	F	%	
Hc1	Attitude	3	1.20	0	0	8	3.21	148	59.43	90	36.14	4.29
	Competencies	0	0	3	1.20	24	9.63	153	61.44	69	27.71	4.16
Hc3	Education	0	0	0	0	44	17.67	170	68.27	35	14.05	3.96
Hc4	Knowledge	21	8.43	53	21.28	135	54.21	19	7.63	21	8.43	2.86
Hc5	Skills	0	0	3	1.20	31	12.44	181	72.69	34	13.65	3.99
	Subtotal											**3.85**
Sc1	Copyright	0	0	22	8.83	37	14.85	153	61.44	37	14.85	3.82
Sc2	Corporate culture	0	0	3	1.20	16	6,42	168	67,46	62	24,89	4.16
Sc3	Design rights	0	0	3	1,20	29	11,64	182	73,09	35	14,05	4.00
Sc4	Financial relations	7	2,81	49	19,67	73	29,31	85	34,13	35	14,05	3.37
Sc5	Information technology infrastructure	7	2,81	24	9,60	73	29,30	132	53,0	13	5,20	3.48
Sc6	Management processes	0	0	0	0	27	10,80	176	70,70	46	18,50	4.08
	Subtotal											3.81
Rc1	Brand	0	0	0	0	16	6,40	176	70,70	57	22,90	4.16
Rc2	Company name	0	0	3	1.20	63	25.30	152	61.0	31	12.40	3.85
Rc3	Customers	0	0	0	0	59	23.70	151	60,60	39	15.70	3.92
Rc4	Distribution channels	0	0	14	5,60	77	30,90	139	55,80	19	7,60	3.65
Rc5	Franchise agreements	0	0	0	0	27	10,80	180	72,30	42	16,90	4.06
Rc6	Loyalty	0	0	16	6,40	72	28,90	153	61,40	8	3,20	3.61
	Subtotal mean											**3.87**
	Total mean											**3.84**

Information
1. STS: strongly disagree; 2. TS: disagree; 3. N: neutral; 4. S: agree; 5. SS: strongly agree

Source: priamry data analysis, processed

From table 1. Intellectual capital can be seen that: The largest proportion of opinions seen from the average value is in the Hc1 indicator "Attitude" with the statement "My employees have a good attitude, are responsive and respond immediately in carrying out their work". This is known from the response to the respondent's answer choice with a mean of 4.29. The proportion of the smallest opinion is seen from the average value found in the HC4 indicator "Knowledge" with the statement "My employees have extensive knowledge and insight in carrying out their work" with a mean of 2.86.

As for when viewed from the strength of Intellectual capital in each dimension of human capital, structural capital, and relational capital, it appears in the Relational capital dimension with the mean sub-value of 3.87 with the meaning that the implementation of intellectual capital in the creative industry is more prominent in the Relational capital component that is in a strong range. Whereas if viewed from the strength of intellectual capital as a whole (Total), it can be seen from the mean value of 3.84 which has the meaning that intellectual capital in the creative industry is in a strong range.

Thus it can be concluded that the existing intellectual capital in the creative industry is strong and prioritizes the Relational capital dimension.

Description of Creative Industry Performance

Creative Industry Performance, measurement of this variable refers to several references that need to be adjusted consisting of a. employment opportunities, b. profit level, c. industrial growth, d. profit growth, e. sales growth, f. overall response to competition, g. level of success in new product launches, h. creativity escalation, i. skill escalation, j. individual talent escalation. The full data can be seen in the following table.

From the following table of creative industry performance can be seen that: The largest proportion of opinions seen from the mean value is found in indicator Kik 5 "Growth in market share" with the statement "My business has a growing market share that increases over time". This is known from the response to the respondent's answer choice with a mean of 3.8554. Whereas seen from the proportion of the smallest opinion found in the Kik 4 indicator "Employment Opportunities" with the statement "My business, has employment opportunities for new employees" This implies that the performance of the creative industry places more emphasis on market share growth in the high range.

Table 2. Description of creative industry performance

	INDICATOR	SCORE										Mean (X)
		(1) STS		(2) TS		(3) N		(4) S		(5) SS		
		F	%	F	%	F	%	F	%	F	%	
Kik1	Provit growth	0	0	14	5.60	65	26,10	142	57,0	28	11,20	3.74
Kik2	Sales growth	0	0	11	4.40	63	25,30	160	64.30	15	6,0	3.72
Kik3	Level of succes in new product launches	0	0	11	4,40	67	26.9	147	59.0	24	9,60	3.74
Kik4	Employment opportunuties	0	0	20	8.0	57	22,90	149	59.80	23	9.20	3.70
Kik5	Market growth	0	0	19	7.60	35	14.10	158	63.50	37	14.90	3.86
	Total mean											**3.75**

Information
1. STS: strongly disagree; 2. TS: disagree; 3. N: neutral; 4. S: agree; 5. SS: strongly agree

Source: primary data analysis, processed

As for when viewed from the high and low performance of the creative industry on the description table above, it can be seen from the total mean value of the mean = 3.75 with the meaning that the performance of the creative

industry in East Java has a high range. Thus it can be concluded that the performance of the creative industry has a high range and emphasizes more on the "growth of market share" of the creative industry.

Mapping the Spider Plot Model

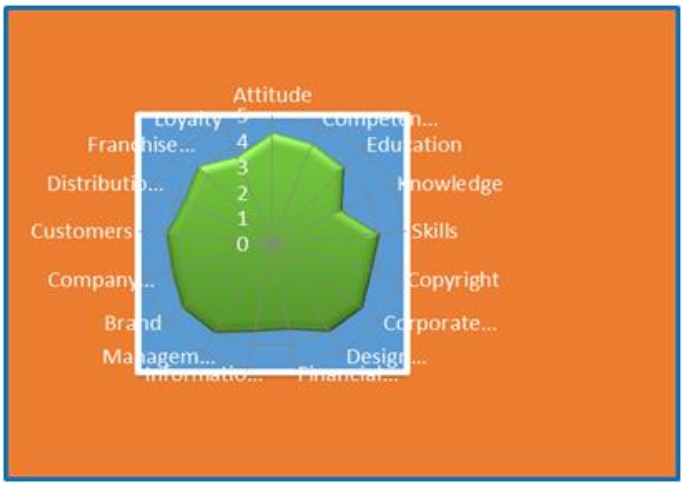

Figure 2. Diagram spider plot intellectual capital

local potential fishermen in Sidoarjo Regency are as follows: a. *Look*, in these activities, observation, interviews, preliminary assessments of target groups (women fishermen), local resources, socioeconomic environments and source systems within and outside the community. b. *Think*, this activity is conducted through Focus Group Discussion with target groups as well as potential and resource system in the environment that can be utilized in empowerment program of women fishermen. c. *Act*, or treatment, this activity is carried out various guidance, facilitation, monitoring and evaluation. Key informants in this research are women fishermen who join a community or group of women fishermen or working groups of women empowerments that already exist. In addition, interviews were made to local community leaders, relevant agencies, and other competent stakeholders. Based on the results and discussions described above, it can be formulated a model of empowerment of women-based local potential fishermen in Sidoarjo District as presented in Figure 1.

The analysis technique of the Spider Plot Diagram (Radar Graph) is a graphical method of displaying multivariate data in the form of two-dimensional graphs of three or more quantitative variables represented by axes starting at the same point. Radar graph is a graph and/or plot to consist of fingers which explains the value of one variable. The length of the radius is equal to the value of the variable. Then the lines are drawn connecting the values of the data. This forms a plot in the form of a radar or a star. Related to Spider Intellectual Capital Plots can be seen in the Radar diagram as follows. In the diagram it appears that the "KNOWLEDGE" indicator has the weakest radar output, indicating that the knowledge possessed by the creative industry in East Java is weak. While the biggest indicator appears in "ATTITUDE", it means that attitude has the biggest response in the creative industry in East Java.

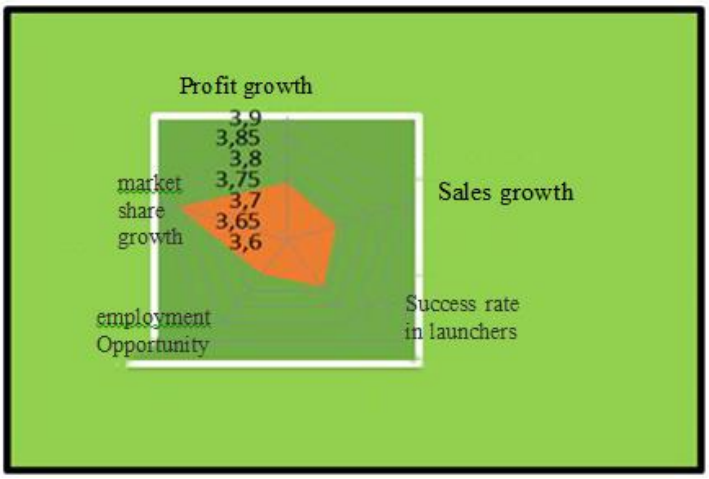

Figure 3. Diagram spider of performance plot industry creative

Whereas if studied related to Spider Creative Industry Performance Plot can be seen in the Radar diagram as follows. In the diagram it appears that the "Job Opportunities" indicator has the weakest radar output, it shows that employment opportunities are the lowest response to the performance of creative industries in East Java, meaning that the contribution of employment opportunities in the creative industry has not been maximized in employment. Whereas the highest radar mapping was observed in "Market share growth", with the meaning that the breakthrough into the wider market was the most popular response from the creative industry managers/leaders in East Java.

CONCLUSION

Intellectual Capital in the creative industry in the performing arts sub-sector; Interactive game; Markets and art goods; Film, video, photo graphic; Research & development has a different mapping in each dimension. The Relational Capital Dimension has more prominent mapping than Structural capital or Relational capital. The Human Capital dimension of the Hc1 indicator "Attitude" is the most dominant indicator. As you can see, the lowest indicator is on the Hc4 indicator "Knowledge". While the Kik 5 indicator is the most dominant indicator. In line with this, the indicator Kik 4 is the lowest indicator.

ACKNOWLEDGEMENT

Thank you to the Head of the East Java Provincial Office of Industry and Trade. The gratitude is also expressed to the Chair of the Arts Council in East Java: Surabaya, Mojokerto, Batu, Malang, Pasuruan, Probolinggo, Kediri, Blitar, and Madiun. Last but not least, the gratitude also goest to the manager/leader/ owner of creative industry sub-sector: performing arts; an interactive game; markets and art goods; film, video, photo graphic; research & development.

REFERENCES

Cabrita, Maria DR, Bontis, N. (2008). Intellectual Capital and Business Performance in The Portuguese Banking Industry'. *Int. J. Technology Management 43*(1-3), 212–237.

Helena S, R., Miguel, G. L., Pedro, F. D. (2012). System of Innovation and innovative SMEs: A Model to Measure the Intellectual Capital of SMEs, Proceedings of the 4th European Conference on Intellectual Capital ,Book version ISBN: 978-1.

Huang, Y., & Wu, YJ. (2010). Intellectual Capital and Knowledge Productivity: the Taiwan Biotech Industry. *Management Decision, 48*(4), 580-99.

Loureiro & Pedro, F. D. (2012). Intellectual capital and system of innovation: What really matters at innovative SMEs. *Intellectual Capital 8* (2), 239-274.

Mouritsen, J. (1998). Driving Growth: Economic Value Added versus Intellectual Capital. *Management Accounting Research, 9,* 461-482.

Purwanto, A. B, (2015). Pengaruh Service Performance Dan Relationship Marketing Terhadap Loyalitas Konsumen, Fokus Ekonomi. Jurnal Ilmiah Ekonomi *10*(1), 1907-6304

Stewart, T.A. ,(1997). Intellectual Capital: The New Wealth of Organisations, Doubleday-Currency, London.

Sukarno, G. (2013) Menumbuhkan Industri Kreatif Di Surabaya, Seminar Nasional & Sidang Pleno ISEI XVI "Mempercepat Penguatan Daya Saingekonomi Daerah Menghadapi Masyarakat Ekonomi Asean 2015", 18–20 September 2013, 18–20 September 2013, Abadi Suite Hotel Jambi.