International Journal of Psychosocial Rehabilitation, Vol. 24, Issue 06, 2020
ISSN: 1475-7192

How to Build Innovation Capability in the RAC Industry to Face Industrial Revolution 4.0?

[1]Masduki Asbari, [2]Laksmi Wijayanti, [3]Choi C. Hyun, [4]*Agus Purwanto, [5]Priyono Budi Santoso

***ABSTRACT**--Nowadays, innovations are much talked about, discussed, written and discussed in small to large classrooms, meeting rooms for managers and leaders. Innovation is associated with the need to survive amidst the industrial era 4.0. Innovation cannot be separated from personal knowledge and communal knowledge. Whereas knowledge consists of tacit and explicit knowledge both of which require good and continuous management. This study aims to measure the effect of tacit and explicit knowledge on innovation capability mediated by organizational learning. Data collection was carried out by simple random sampling via electronics in a population of Refrigeration and Air Conditioning (RAC) technicians in Indonesia. The results of the questionnaire returned were 632 and valid were 620 samples. Data processing using SEM method with SmartPLS 3.0 software. The results of this study are explicit and tacit knowledge has a positive and significant effect on innovation capability, both directly and through mediating organizational learning. This research novelty is proposing a model of building innovation capability in the RAC industry through tacit & explicit knowledge transfer with organizational learning as mediation. This research can open the way to increase readiness index in the RAC industry to deal with industrial revolution 4.0.*

***Keywords**-- Explicit knowledge, industrial revolution 4.0, innovation capability, organizational learning, tacit knowledge,*

I. INTRODUCTION

A new challenge that is currently affecting the existence and sustainability of the RAC industry is the dramatic change that has come from Industrial Revolution 4.0. This industrial revolution requires quality human resources that are more qualified, agile, adaptive and responsive to rapid change. Business organizations also need an environment that continues to grow positively and is conducive to competition in the global market. Therefore, it

[1] Post Graduate Program, Pelita Harapan UniversityGedung D-Lantai 1, Jl. MH. Thamrin Boulevard 1100, Kelapa Dua, Kec. Karawaci, Kota Tangerang, Banten 15811, Indonesia.

[2] Post Graduate Program, Pelita Harapan UniversityGedung D-Lantai 1, Jl. MH. Thamrin Boulevard 1100, Kelapa Dua, Kec. Karawaci, Kota Tangerang, Banten 15811, Indonesia.

[3] Post Graduate Program, Pelita Harapan UniversityGedung D-Lantai 1, Jl. MH. Thamrin Boulevard 1100, Kelapa Dua, Kec. Karawaci, Kota Tangerang, Banten 15811, Indonesia.

[4] Post Graduate Program, Pelita Harapan UniversityGedung D-Lantai 1, Jl. MH. Thamrin Boulevard 1100, Kelapa Dua, Kec. Karawaci, Kota Tangerang, Banten 15811, Indonesia, agozpor@gmail.com.*

[5] Post Graduate Program, Pelita Harapan UniversityGedung D-Lantai 1, Jl. MH. Thamrin Boulevard 1100, Kelapa Dua, Kec. Karawaci, Kota Tangerang, Banten 15811, Indonesia.

Received: 22 Sep 2019 | Revised: 13 Oct 2019 | Accepted: 15 Jan 2020

cannot be denied that the RAC industry needs a synergy between human resources and the work environment that is able to make continuous improvements in innovation and performance. The point is that in this era of knowledge economy emerging knowledge societies need innovation and flexibility as energy to survive competition. Therefore, the company's strategic development in the future is to increase knowledge resources that open space for innovation, rapid growth.

Industrial players for companies are as organizational entities that make or provide goods or services for consumers. The spirit of a business is generally formed to generate profits (profit oriented) and increase prosperity for their owners (self interest). It can be simply concluded that the vision of the industry for industry players is the vision of those who are institutionalized and organized in the company to achieve maximum profits. Serve consumers essentially serving their own interests / goals. The implications of this industrial work procedure target all good people involved in the production process to end users (end users / consumers). The choice is only two to become a player with all the risk (risk taker) or the user by accepting the risk (risk maker).

To ensure that business organizations can be competitive and adaptive, organizational employee need to be educated and involved in pumping organizational performance. As a result, organizations must become organizational learning. Organizational learning is very important for corporate organizations operating in unpredictable environments changes. So the speed of response to changes is an absolute requirement to win the competition with competitors.

Objectively, it cannot be denied that the current industrial revolution holds a variety of advantages and great challenges that must be faced for each of the entities involved in it. Especially the economic problem for a nation and state. One of the benefits gained is finding new opportunities but also being followed by new challenges. On the other hand, this situation has led to increasingly fierce competition both among domestic individuals / companies and with foreign companies. This competition actually increases the internal and external quality of each individual / company.

The knowledge of individuals and organizations becomes intellectual capital which quickly becomes a new icon that illustrates the economic value of a company organization. This is the new paradigm of industry 4.0. Dependence on traditional productive assets such as raw materials, land and other tangible assets is no longer a major investment contribution in the future. Productive and sustainable assets in the future are intangible assets in the form of knowledge. This study seeks to understand the effect of learning process and individual knowledge sharing (tacit and explicit knowledge) of RAC technicians in Indonesia that are associated with increasing their innovation capability.

II. RESEARCH HYPOTHESIS

Based on the problem formulation, theoretical study, and conceptual framework of the research hypothesis as follows:

H1: Explicit knowledge direct effect on innovative capability
H2: Tacit knowledge direct effect on innovative capability
H3: Explicit knowledge direct effect on organizational learning

Received: 22 Sep 2019 | Revised: 13 Oct 2019 | Accepted: 15 Jan 2020

H4: Tacit knowledge direct effect on organizational learning

H5: Organizational learning direct effect on innovative capability

H6: Explicit knowledge indirect effect on innovative capability through mediation organizational learning

H7: Tacit knowledge indirect effect on innovative capability through mediation organizational learning

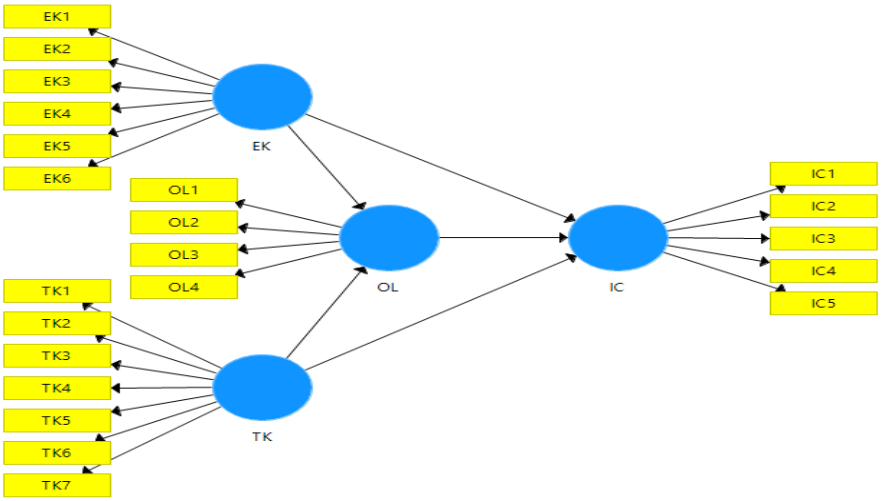

Figure 1: Research Model

III. LITERATURE REVIEW AND HYPHOTESES

Industrial Revolution 4.0

Globalization has entered a new era called the Industrial Revolution 4.0. (Shwab, 2016). The fourth Industrial Revolution Era is dominated by intelligence artificial (artificial intelligence), super computers, genetic engineering, nano technology, automatic cars, and innovation. These changes occur in its exponential speed will have an impact on the economy, industry, government and politics. In this era more and more visible form the world that has become a village global. (Prasetyo & Trisyanti, 2018).

The definitions regarding Industry 4.0 vary because still in the research and development phase. German Chancellor, Angela Merkel (2014) argues that Industry 4.0 is a comprehensive transformation from all aspects of production in the industry through merging digital and internet technology with conventional industry. Schlechtendahl et al (2015) emphasize the definition of the speed element of information availability, which is an industrial environment where all the entities are always connected and capable share information with one another. A more technical understanding is conveyed by Kagermann, Lukas & Wahlster (2013) that Industry 4.0 is integration of Cyber Physical System (CPS) and the Internet of Things and Services (IoT and IoS) into the process industry includes manufacturing and logistics and processes the other. CPS is a technology to combine between the real world and the virtual world. Merging this can be realized through integration between physical processes and computing (embedded computers and technology network) in a closed loop (Lee, 2008). Hermann, Pentek & Otto (2016) added that Industry 4.0 is a term to refer to a collection of technologies and organizations value chains such as smart factories, CPS, IoT and IoS. Smart factory is a modular factory with technology CPS which monitors the physical process of production later display it virtually and do decentralized decision making. Through IoT,

CPS able to communicate with each other and work together in a way real time including with humans. IoS is all service applications that can be utilized by each internal and external stakeholders between organizations. There are six industrial design principles 4.0 namely interoperability, virtualization, decentralization, real time capabilities, service oriented and are modular. Based on some of the explanations above, Industry 4.0 can be interpreted as an industrial era in which the whole entities in it can be mutually communicate in real time anytime with based on the use of internet technology and CPS in order to achieve the goal of achieving new value creations or optimization of the value that already exists from each process in the industry (Prasetyo & Sutopo, 2018)

Tacit Knowledge

Knowledge is classified into two types including: tacit knowledge and explicit knowledge (Polanyi, 1966). The definition of tacit knowledge is knowledge that is still in the human mind and is very personal (Chen et al, 2018; Holford, 2018; Khoshorour & Gilaninia, 2018; Zebal, Ferdous & Chambers, 2019; Agyemang & Boateng, 2019; Perez-Fuillerat et al, 2018), it is difficult to be formulated and divided naturally (Deranek, McLeod & Schmidt, 2017; Wang & Liu, 2019; Asher & Popper, 2019) so that the transformation requires personal interaction (Lee, 2019). This tacit knowledge is rooted in one's actions and experiences, including his idealism, values, and emotions (Boske & Osanloo, 2015; Kawamura, 2016; Hartley, 2018).

Based on his understanding, tacit knowledge is categorized as personal knowledge or in other words knowledge obtained from individuals or individuals (Nonaka & Toyama, 2015; Munoz et al, 2015; Stewart et al, 2017; Razmerita et al, 2016; Jaleel & Verghis, 2015; Wang et al., 2016; Serna et al., 2017; Jou et al., 2016; Rothberg & Erickson, 2017). The experience gained by each employee varies according to circumstances and conditions that cannot be predicted. Tacit knowledge is not easily articulated and converted to explicit knowledge (Mohajan, 2016; Prasarnphanich et al, 2016; Addis, 2016; Cairo Battistutti, 2017; Zang et al, 2015; Spraggon & Bodolica, 2017). Nevertheless, tacit knowledge can be empowered by the process of knowledge spiral or SECI Model (Li, Liu & Zhou, 2018; Nonaka & Hirose, 2018; Chatterjee et al, 2018; Sasaki, 2017; Lievre & Tang, 2015; Stanica & Peydro, 2016 ; Norwich et al., 2016; Hodgins & Dadich, 2017; Balde et al., 2018; Okuyama, 2017; Huang et al., 2016).

Every organization must utilize its employees' tacit knowledge by encouraging them to share knowledge and keep learning. Companies like this will be more creative, innovative in leading the industry era 4.0. Organizations can facilitate the management and use of tacit knowledge that is outside the consciousness that is stored under the subconscious mind by embedding and sharing approaches (Ma et al, 2018; Ferreira et al, 2018; Borges et al, 2019; Ferraris et al, 2018; Guo et al., 2018; Tsai & Hsu, 2019; Swierczek, 2019; Cantwell & Zaman, 2018).

Explicit Knowledge

Explicit knowledge is one type of knowledge that is easily documented and formed (Choi & Lee, 2003; Sousa & Rocha, 2019; Borrego et al, 2019; Wokcik et al, 2019; Cifariello, Ferragina & Ponza, 2019; Che et al, 2018; Tang et al, 2016; Bashir & Farooq, 2019; Attia & Salama, 2018), easily articulated (Haamann & Basten, 2018) and usually constitute knowledge inherent in the organization (Afsar, Masood & Umrani, 2019). In addition, explicit knowledge can be created, written and transferred between organizational units (Lombardi, 2019). Explicit transfer of knowledge among employees is more easily driven by a conducive mechanism and organizational culture.

Organizational Learning

Good organizational learning will be more resilient to crises (Starbuck, 2017). Dimensions such as desire, discipline, decision making, democracy, and dividends are presented as important elements in which organizational learning (Wetzel & Tint, 2019; Urban & Gaffurini, 2018). Organizational learning is also an important performance indicator for evaluating overall organizational performance (Qi & Chau, 2018) which is able to help build the necessary knowledge resources and maintain organizational growth and sustainability. The ability to access knowledge is a distinguishing factor between organizations. The success of company's strategy is very significant related to the solid knowledge base owned by every person in the company.

Innovation Capability

The current industrial era 4.0 requires innovation capability as an organizational competitive advantage (Malik, 2019; Muscio & Ciffolili, 2019; Durana et al, 2019; Lund & Karlsen, 2019; Haseeb et al, 2019; Jakhar et al, 2018; Hamada, 2019;), competitive strategy (Culot, Orzes & Sartor, 2019), the key to dealing with industry era 4.0 (Stachova et al, 2019) part of the quality of 21st century management (Gunasekaran, Sabramanian & Ngai, 2019), gives many benefits to businesses (Zambon et al, 2019; Parida, Sjodin & Reim, 2019). Innovative capability is recognized as one of the most important internal resources that can produce superior company performance (Zouaghi et al, 2018; Santoro et al, 2017; Castela et al, 2018; Ruiz-Torres et al, 2018; Huesig & Endres, 2019)

Influence of Tacit and Explicit Knowledge on Innovation Capability

In the current industry 4.0 era, marked by increasingly fierce competition, sustainability remains an important concern and issue. Innovation capability is driving business sustainability. This performance depends on the culture of knowledge contained in the organization. Knowledge consisting of tacit and explicit knowledge. Many researchers discuss innovation capability which concludes that innovation is influenced by leadership (Samsir, 2018; Schuckert et al, 2018; Villaluz & Hechanova, 2019), employee involvement climate (Naqshbandi, Tabche & Choudhary, 2019) knowledge sharing (Kim & Shim, 2018)) knowledge search (Wang, Chen & Chang, 2019) collaborative culture (Yang, Nguyen & Le, 2018) knowledge process (Imran et al, 2018). This study, would like to examine the effect of tacit and explicit knowledge on innovation capability in the RAC industry in context of welcoming industrial revolution 4.0. Previous researchers have proven the positive and significant influence of tacit and explicit knowledge on innovation capability (Ganguly et al, 2019; Aulawi, 2018; Rumanti et al, 2018 & 2019; Torres & Liang, 2016; Li et al, 2019). More specifically, many researchers conclude that tacit knowledge has a positive and significant effect on innovation capability (Perez-Luno et al, 2018).

Influence of Tacit and Explicit Knowledge on Organizational Learning

Learning organization is one of the strategies for organizations to study the dynamics of their business environment (Senge, 1990; Zhu et al., 2018; Kasim et al., 2018; Darwish et al., 2018). Organizations with managed learning routines will produce knowledgeable individuals, both explicit and tacit knowledge (Hussain et al, 2018). Some researchers conclude that organizational learning is influenced by collaborative culture and knowledge

sharing (Nugroho, 2018). Tacit knowledge was found to be a very significant predictor for the development of organizational learning (Muthuveloo, Shanmugam & Teoh, 2017).

Influence of Organizational Learning on Innovation Capability

Knowledge creation conditioned by organizational learning will trigger and spur innovation capability and organizational performance (Asbari, Purwanto & Santoso, 2019; Vijande & Sanchez, 2017; Lin & Lee, 2017). Organizational innovation will be sustainable when it is based on a culture of learning that adds value. This learning culture that makes organizational members interact with each other so that their current and new acquired knowledge can be effectively transferred, exchanged and combined into organizational intelligence and knowledge (Lin & Lee, 2017; Lee et al, 2016; Chang & Lin , 2015).

IV. METHODS

Operational Definitions of Variables and Indicators

The method used in this study is quanitative method with a correlational research approach. Data collection was carried out by simple random sampling via electronics in a population of Refrigeration and Air Conditioning (RAC) technicians in Indonesia. The results of the questionnaire returned were 632 and valid were 620 samples. In total, the response rate is 98.10 percent. The instrument used to measure explicit knowledge sharing was adapted from Liebowitz & Chen (2001) and Wang & Wang (2012). Tacit knowledge sharing was adapted from Holste & Fields (2010), Lin (2006), and Wang & Wang (2012). Organizational learning is measured from instruments adapted from Jiménez-Jiménez and Sanz-Valle (2011). Innovation capability was adapted from Lee & Choi (2003). The questionnaire was designed closed except for questions / statements about the identity of respondents in the form of a semi-open questionnaire. Each closed question / statement item is given five answer options, namely: strongly agree (SA) score 5, agree (A) score 4, disagree (DA) score 3, disagree (DA) score 2, and strongly disagree (SDA) score 1. The method for processing data is by PLS and using SmartPLS software version 3.0 as a tool.

Population and Sample

The population in this study is the Refrigeration and Air Conditioning (RAC) Industry technician in Indonesia. The questionnaire was distributed electronically with a simple random sampling technique. The results of the questionnaire returned were 632 and valid were 620 samples. In total, the response rate is 98.10 percent.

V. RESULTS AND DISCUSSION

Sample Description

Table 1: Sample Descriptive Information

Criteria		Amount	%
Age (per Oktober 2019)	< 30 years old	138	22.25%
	30 - 40 years old	259	41.75%
	> 40 years old	223	36.00%

Working period as a permanent employee	< 5 years old	65	10.50%
	5-10 years old	369	59.50%
	> 10 years old	186	30.00%
Last formal education	Bachelor degree	67	10.75%
	Senior High School / Equal	468	75.50%
	≤ Junior High School	85	13.75%

Test Results Validity and Reliability of Research Indicators

The testing phase of the measurement model includes convergent validity, discriminant validity and composite reliability testing. The results of the PLS analysis can be used to test research hypothesis if all the indicators in the PLS model have met requirements of convergent validity, discriminant validity and reliability testing.

1. Convergen Validity Testing

Convergent validity test is done by looking at the loading factor value of each indicator to the construct. For most references, a factor weight of 0.5 or more is considered to have validation that strong enough to explain latent constructs (Chin, 1998; Hair et al, 2010; Ghozali, 2014). In this study the minimum limit on the size of loading factor received was 0.5, with requirement that the AVE value of each construct > 0.5 (Ghozali, 2014).

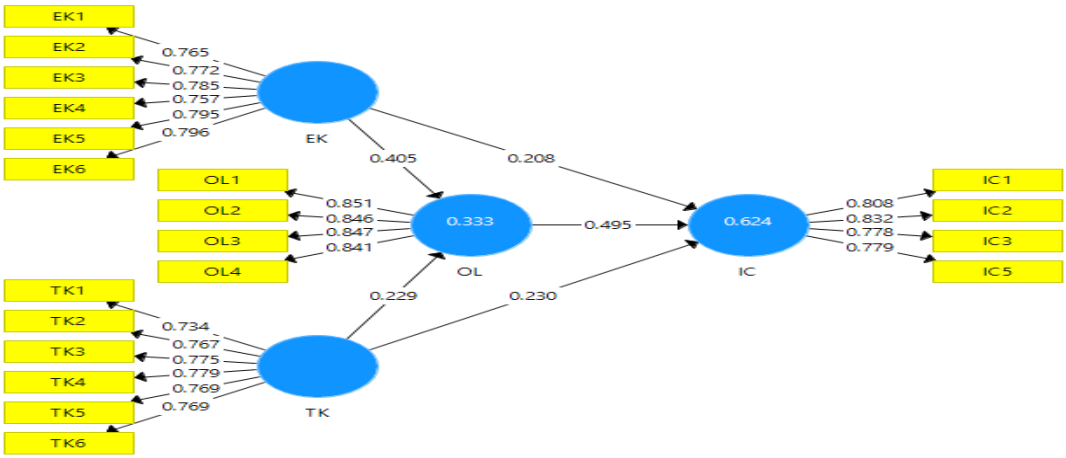

Figure 2: Valid model estimation

Based on the estimation results of the PLS model in the picture above, all indicators already have a loading factor value above 0.5 so that the model meets convergent validity requirements. In addition to looking at the loading factor value of each indicator, convergent validity is also assessed from the AVE value of each construct. The PLS model is stated to have fulfilled convergent validity if the AVE value of each construct is > 0.5 (Ghozali, 2014). The full AVE value for each construct can be seen in the following table:

Table 2: Items Loadings, Cronbach's Alpha, Composite Reliability, and Average Variance Extracted (AVE)

Variables	Items	Loadings	Cronbach's Alpha	Composite Reliability	AVE
Tacit Knowledge	TK1	0.734	0.859	0.895	0.586
(TK)	TK2	0.767			
	TK3	0.775			
	TK4	0.779			
	TK5	0.769			
	TK6	0.769			
Explicit Knowledge	EK1	0.765	0.870	0.902	0.606
(EK)	EK2	0.772			
	EK3	0.785			
	EK4	0.757			
	EK5	0.795			
	EK6	0.796			
Organizational learning	OL1	0.851	0.868	0.910	0.716
(OL)	OL2	0.846			
	OL3	0.847			
	OL4	0.841			
Innovation capability	IC1	0.808	0.812	0.876	0.639
(IC)	IC2	0.832			
	IC3	0.778			
	IC5	0.779			

2. Discriminant Validity Testing

Discriminant validity is carried out to ensure that each concept of each latent variable is different from the other latent variables. The model has good discriminant validity if the AVE squared value of each exogenous construct (the value on the diagonal) exceeds the correlation between the construct and the other construct (values below the diagonal) (Ghozali, 2014). The results of discriminant validity testing using AVE squared values, namely by looking at the Fornell-Larcker Criterion Value obtained as follows:

Table 3: Discriminant Validity

Variables	EK	IC	OL	TK
EK	**0.778**			
IC	0.624	**0.800**		
OL	0.549	0.720	**0.846**	
TK	0.629	0.600	0.483	**0.766**

Received: 22 Sep 2019 | Revised: 13 Oct 2019 | Accepted: 15 Jan 2020

The results of the discriminant validity test in the table above show that all constructs have the AVE square root value above the correlation value with other latent constructs (through the Fornell-Larcker criteria) so that it can be concluded that the model meets discriminant validity.

3. Construct Reliability Testing

Construct reliability can be assessed from the value of Cronbach's alpha and composite reliability of each construct. The recommended composite reliability and Cronbach's alpha values are more than 0.7. (Ghozali, 2014). The reliability test results in table 2 above show that all constructs have composite reliability and Cronbach's alpha values greater than 0.7 (> 0.7). In conclusion, all constructs have met the required reliability.

Hyphoteses Testing

Hypothesis testing in PLS is also called the inner model test. This test includes a test of the significance of direct and indirect effects and measurement magnitude influence of exogenous variables on endogenous variables. To find out the influence of tacit and explicit knowledge sharing on organizational learning and innovation capability, a direct influence test is needed. The direct effect test is performed using the t-statistic test in a partial least squared (PLS) analysis model using the help of SmartPLS 3.0 software. With the boothstrapping technique, R Square values and significance test values are obtained as in the table below:

Table 4: R Square Value

	R Square	R Square Adjusted
IC	0.624	0.622
OL	0.333	0.331

Table 5. Hypotheses Testing

Hypotheses	Relationship	Beta	SE	T Statistics	V-Values	Decision
H1	**EK -> IC**	0.208	0.037	5.615	0.000	Supported
H2	**TK -> IC**	0.230	0.037	6.212	0.000	Supported
H3	**EK -> OL**	0.405	0.050	8.022	0.000	Supported
H4	**TK -> OL**	0.229	0.048	4.790	0.000	Supported
H5	**OL -> IC**	0.495	0.036	13.590	0.000	Supported
H6	**EK -> OL -> IC**	0.200	0.029	6.809	0.000	Supported
H7	**TK -> OL -> IC**	0.113	0.024	4.669	0.000	Supported

Based on table 4 above, the R Square OL value of 0.333 means that organizational learning (OL) variables can be explained by tacit knowledge (TK) and explicit knowledge (EK) variables by 33.3%, while the remaining 66.7% is explained by other variables not discussed in this study. Meanwhile, the value of R Square IC is 0.624 which means that innovation capability (IC) variable can be explained by variable tacit knowledge (TK), explicit knowledge (EK) and organizational learning (OL) by 62.4%, while the remaining 37.6% is explained by other

variables which is not discussed in this study. While Table 5 displays the T Statistics and P-Values which show the influence between research variables that have been mentioned.

Discussions

Based on the results of the study, it can be concluded that explicit knowledge and tacit knowledge have a positive and significant influence on innovation capability. Both directly and through organizational learning mediation. It means that the more explicitly explicit and tacit knowledge sharing is carried out by employees, the more conducive innovation capability of individual company employees will be. This finding is in line with previous studies namely Perez-Luno et al (2018), Terhorst et al (2018), Boadu et al (2018), Che et al (2019). Likewise, the better the tacit and explicit knowledge of an employee, the more positive the formation and development of organizational learning in the company. Likewise, the conclusions from the study of Qi & Chau (2018). It implies that the rarest and most valuable resources in the digital age are not ordinary labor and mediocre, but individuals who can create new ideas and innovations (Xu, David & Kim, 2018). For this reason, the scarcity of employees who have adequate and skilled tacit and explicit knowledge can stifle the company's innovation, competitiveness, growth and flexibility. No doubt, in the future, the talent and response of individuals in the process of knowledge sharing will represent an important factor of production. People with ideas and innovation will become luxury goods in competitive capital.

Based on the findings of this study also concluded that organizational learning has a positive and significant effect on innovation capability. Organizational learning also mediates the influence of tacit and explicit knowledge on innovation capability. It is consistent with the conclusion of Martinez-Costa (2018). This study also concluded that companies can manage past experiences to be combined with tacit and explicit knowledge possessed by today's employees. In essence, organizational learning is able to provide positive conditions in the process of knowledge creation. Whereas knowledge creation and knowledge management are closely related to industry performance in the current 4.0 era.

VI. CONCLUSIONS AND SUGGESTIONS

Conclusions

To add the role of tacit knowledge as a predictor of innovation capability, organizations need to provide autonomy and breadth to share with employees. Therefore, organizations need to create organizational learning as positive environment that drives the competence and engagement of individual employees in the company. Indeed knowledge management will run effectively in the company if the individual performance of each employee is in good condition (Manaf et al, 2017).

Researchers continue to learn about knowledge as an important organizational resource and it can be said that knowledge transfer, both tacit and explicit knowledge, can significantly improve organizational performance (Thomas, 2019). Organizational learning transforms individual knowledge into organizational knowledge. This study concludes that organizational learning acts as a catalyst of the process knowledge sharing among individual RAC technicians.

Received: 22 Sep 2019 | Revised: 13 Oct 2019 | Accepted: 15 Jan 2020

Managerial Implications

Based on the conclusion of this research, management of RAC industry companies needs to build maximum involvement of all employees to conduct knowledge sharing both in the form of tacit knowledge and explicit knowledge. The SECI model can be used to carry out this process. Employee training in every part of the organization is a necessity with the level of intensity, content and context tailored to each employee's key performance indicator.

The process of sharing knowledge to build a company's innovation capability should not only be limited to the internal processes of the organization. However, management needs to expand the process of building this innovation through efforts to absorb, articulate, utilize and manage knowledge sourced from external partners such as customers, contractors, suppliers, campuses and educational institutions, even the industrial community on a wider scale. Management can activate learning from others when assigning employees to visits to suppliers, customers, campuses and other strategic partners. Because external knowledge, such as those from suppliers, clients, contractors and consultants supports the company's innovation capability (Simao & Franco, 2018)

In addition, commitment to learning and seriousness to be involved in managing the learning environment are things that need attention. Because the company can become organizational learning when all company members feel enjoy this learning process. Learning process becomes an organizational culture that encourages innovation (Asbari, Santoso & Purwanto, 2019). The key factors of organizational learning are trust, open communication, high involvement, the presence of industry challenges, and a creative work atmosphere. The task of management is to facilitate the fulfillment of these key factors.

Limitation

This study has several limitations. First, this study analyzes the effect of tacit and explicit knowledge on innovation capability both directly and indirectly through organizational learning variables. Because there may be several other variables that affect innovation capability, the authors strongly recommend finding, exploring and analyzing them. Secondly, this research was conducted in the RAC industry and may not be generalized to other industries. Therefore it is highly recommended that further research be carried out on this topic in other industries.

REFERENCES

1. Addis, M. (2016) Tacit and explicit knowledge in construction management, Construction Management and Economics, 34:7-8, 439-445, DOI: 10.1080/01446193.2016.1180416
2. Afsar, B., Masood, M., & Umrani, W. A. (2019). The role of job crafting and knowledge sharing on the effect of transformational leadership on innovative work behavior. Personnel Review. doi:10.1108/pr-04-2018-0133
3. Agyemang, F. G., & Boateng, H. (2019). Tacit knowledge transfer from a master to an apprentice among hairdressers. Education + Training, 61(1), 108–120. doi:10.1108/et-12-2017-0200
4. Asbari, M., Santoso, P., & Purwanto, A. (2019). Pengaruh kepemimpinan dan budaya organisasi terhadap perilaku kerja inovatif pada industri 4.0. JIM UPB (Jurnal Ilmiah Manajemen Universitas Putera Batam), 8(1), 7-15. doi:10.33884/jimupb.v8i1.1562

Received: 22 Sep 2019 | Revised: 13 Oct 2019 | Accepted: 15 Jan 2020

5. Asbari, M., Santoso, P., and Purwanto, A. (2019). Influence of Leadership, Motivation, Competence, Commitment and Culture on ISO 9001:2015 Performance in Packaging Industry, Scholars Journal of Economics, Business and Management, 6(12): 577-582. DOI: 10.36347/sjebm.2019.v06i12.005
6. Asher, D., & Popper, M. (2019). Tacit knowledge as a multilayer phenomenon: the "onion" model. The Learning Organization. doi:10.1108/tlo-06-2018-0105
7. Attia, A. and Salama, I. (2018), "Knowledge management capability and supply chain management practices in the Saudi food industry", Business Process Management Journal, Vol. 24 No. 2, pp. 459-477. https://doi.org/10.1108/BPMJ-01-2017-0001
8. Aulawi, H. (2018). Improving Innovation capability Trough Creativity and Knowledge Sharing Behavior. IOP Conference Series: Materials Science and Engineering, 434, 012242. doi:10.1088/1757-899x/434/1/012242
9. Baldé, M., Ferreira, A. and Maynard, T. (2018), "SECI driven creativity: the role of team trust and intrinsic motivation", Journal of Knowledge Management, Vol. 22 No. 8, pp. 1688-1711. https://doi.org/10.1108/JKM-06-2017-0241
10. Bashir, M. and Farooq, R. (2019), "The synergetic effect of knowledge management and business model innovation on firm competence: A systematic review", International Journal of Innovation Science, Vol. 11 No. 3, pp. 362-387. https://doi.org/10.1108/IJIS-10-2018-0103
11. Boadu, F., Xie, Y., Du, Y.-F., & Dwomo-Fokuo, E. (2018). MNEs Subsidiary Training and Development and Firm Innovative Performance: The Moderating Effects of Tacit and Explicit Knowledge Received from Headquarters. Sustainability, 10(11), 4208. doi:10.3390/su10114208
12. Borges, R., Bernardi, M. and Petrin, R. (2019), "Cross-country findings on tacit knowledge sharing: evidence from the Brazilian and Indonesian IT workers", Journal of Knowledge Management, Vol. 23 No. 4, pp. 742-762. https://doi.org/10.1108/JKM-04-2018-0234
13. Borrego, G., Morán, A. L., Palacio, R. R., Vizcaíno, A., & García, F. O. (2019). Towards a reduction in architectural knowledge vaporization during agile global software development. Information and Software Technology. doi:10.1016/j.infsof.2019.04.008
14. Boske, C. and Osanloo, A. (2015), "Conclusion – Preparing all School Community Leaders to Live their Work", Living the Work: Promoting Social Justice and Equity Work in Schools around the World (Advances in Educational Administration, Vol. 23), Emerald Group Publishing Limited, pp. 405-426. https://doi.org/10.1108/S1479-366020140000023032
15. Cairó Battistutti, O. & Bork, D. Cogn Process (2017) 18: 461. https://doi.org/10.1007/s10339-017-0825-6
16. Cantwell, J. and Zaman, S. (2018), "Connecting local and global technological knowledge sourcing", Competitiveness Review, Vol. 28 No. 3, pp. 277-294. https://doi.org/10.1108/CR-08-2017-0044
17. Castela, B., Ferreira, F., Ferreira, J. and Marques, C. (2018), "Assessing the innovation capability of small- and medium-sized enterprises using a non-parametric and integrative approach", Management Decision, Vol. 56 No. 6, pp. 1365-1383. https://doi.org/10.1108/MD-02-2017-0156
18. Chang, C. and Lin, T. (2015), "The role of organizational culture in the knowledge management process", Journal of Knowledge Management, Vol. 19 No. 3, pp. 433-455. https://doi.org/10.1108/JKM-08-2014-0353

Received: 22 Sep 2019 | Revised: 13 Oct 2019 | Accepted: 15 Jan 2020 **2019**

19. Chatterjee, A., Pereira, A. and Sarkar, B. (2018), "Learning transfer system inventory (LTSI) and knowledge creation in organizations", The Learning Organization, Vol. 25 No. 5, pp. 305-319. https://doi.org/10.1108/TLO-06-2016-0039
20. Che, T., Wu, Z., Wang, Y. and Yang, R. (2019), "Impacts of knowledge sourcing on employee innovation: the moderating effect of information transparency", Journal of Knowledge Management, Vol. 23 No. 2, pp. 221-239. https://doi.org/10.1108/JKM-11-2017-0554
21. Che, T., Wu, Z., Wang, Y., & Yang, R. (2018). Impacts of knowledge sourcing on employee innovation: the moderating effect of information transparency. Journal of Knowledge Management. doi:10.1108/jkm-11-2017-0554
22. Chen, H., Baptista Nunes, M., Ragsdell, G., & An, X. (2018). Extrinsic and intrinsic motivation for experience grounded tacit knowledge sharing in Chinese software organisations. Journal of Knowledge Management, 22(2), 478–498. doi:10.1108/jkm-03-2017-0101
23. Chin, WW. (1998). The Partial Least Squares Approach to Structural Equation Modeling. Modern Methods for Business Research, In: G. A. Marcoulides, Ed., Lawrence Erlbaum Associates Publisher, New Jersey, pp. 295-336. https://psycnet.apa.org/record/1998-07269-010
24. Cifariello, P., Ferragina, P., & Ponza, M. (2019). Wiser: A semantic approach for expert finding in academia based on entity linking. Information Systems, 82, 1–16. doi:10.1016/j.is.2018.12.003
25. Culot, G., Orzes, G., & Sartor, M. (2019). Integration and scale in the context of Industry 4.0: the evolving shapes of manufacturing value chains. IEEE Engineering Management Review, 1–1. doi:10.1109/emr.2019.2900652
26. Darwish, T. K., Zeng, J., Rezaei Zadeh, M., & Haak-Saheem, W. (2018). Organizational learning of Absorptive Capacity and Innovation: Does Leadership Matter? European Management Review. doi:10.1111/emre.12320
27. Deranek, K., McLeod, A., & Schmidt, E. (2017). ERP Simulation Effects on Knowledge and Attitudes of Experienced Users. Journal of Computer Information Systems, 1–11. doi:10.1080/08874417.2017.1373610
28. Durana, Kral, Stehel, Lazaroiu, & Sroka. (2019). Quality Culture of Manufacturing Enterprises: A Possible Way to Adaptation to Industry 4.0. Social Sciences, 8(4), 124. doi:10.3390/socsci8040124
29. Ferraris, A., Santoro, G. and Scuotto, V. (2018), "Dual relational embeddedness and knowledge transfer in European multinational corporations and subsidiaries", Journal of Knowledge Management, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/JKM-09-2017-0407
30. Ferreira, J., Mueller, J. and Papa, A. (2018), "Strategic knowledge management: theory, practice and future challenges", Journal of Knowledge Management, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/JKM-07-2018-0461
31. Ganguly, A., Talukdar, A. and Chatterjee, D. (2019), "Evaluating the role of social capital, tacit knowledge sharing, knowledge quality and reciprocity in determining innovation capability of an organization", Journal of Knowledge Management, Vol. 23 No. 6, pp. 1105-1135. https://doi.org/10.1108/JKM-03-2018-0190
32. Ghozali, I. Structural Equation Modeling, Metode Alternatif dengan Partial Least Square (PLS), Edisi 4. Semarang: Badan Penerbit Universitas Diponegoro. 2014.

Received: 22 Sep 2019 | Revised: 13 Oct 2019 | Accepted: 15 Jan 2020 **2020**

33. Gunasekaran, A., Subramanian, N., & Ngai, E. (2018). Quality Management in the 21st Century Enterprises: Research pathway towards Industry 4.0. International Journal of Production Economics. doi:10.1016/j.ijpe.2018.09.005
34. Guo, Y., Jasovska, P., Rammal, H. and Rose, E. (2018), "Global mobility of professionals and the transfer of tacit knowledge in multinational service firms", Journal of Knowledge Management, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/JKM-09-2017-0399
35. Haamann, T., & Basten, D. (2018). The role of information technology in bridging the knowing-doing gap: an exploratory case study on knowledge application. Journal of Knowledge Management. doi:10.1108/jkm-01-2018-0030
36. Hair, J. F., Black. W. C., Babin. B. J.; and Anderson. R. E. (2010), Multivariate Data Analysis, 7th ed. New Jersey: Pearson Prentice Hall.
37. Hamada, T. (2019). Determinants of Decision-Makers' Attitudes toward Industry 4.0 Adaptation. Social Sciences, 8(5), 140. doi:10.3390/socsci8050140
38. Hartley, J. (2018), "Ten propositions about public leadership", International Journal of Public Leadership, Vol. 14 No. 4, pp. 202-217. https://doi.org/10.1108/IJPL-09-2018-0048
39. Haseeb, M., Hussain, H. I., Ślusarczyk, B., & Jermsittiparsert, K. (2019). Industry 4.0: A Solution towards Technology Challenges of Sustainable Business Performance. Social Sciences, 8(5), 154. doi:10.3390/socsci8050154
40. Hermann, M., Pentek, T., & Otto, B. (2016). Design principles for industrie 4.0 scenarios. System Sciences (HICSS), 49th Hawaii International Conference, pp. 3928-3937. https://doi.org/10.1109/HICSS.2016.488
41. Hodgins, M. and Dadich, A. (2017), "Positive emotion in knowledge creation", Journal of Health Organization and Management, Vol. 31 No. 2, pp. 162-174. https://doi.org/10.1108/JHOM-06-2016-0108
42. Holford, W.D. (2018). The future of human creative knowledge work within the digital economy. Futures. doi:10.1016/j.futures.2018.10.002
43. Holste, J. S., & Fields, D. (2010). Trust and tacit knowledge sharing and use. Journal of Knowledge Management, 14(1), 128–140. doi:10.1108/13673271011015615
44. Huang, F., Gardner, S. and Moayer, S. (2016), "Towards a framework for strategic knowledge management practice: Integrating soft and hard systems for competitive advantage", VINE Journal of Information and Knowledge Management Systems, Vol. 46 No. 4, pp. 492-507. https://doi.org/10.1108/VJIKMS-08-2015-0049
45. Huesig, S. and Endres, H. (2019), "Exploring the digital innovation process: The role of functionality for the adoption of innovation management software by innovation managers", European Journal of Innovation Management, Vol. 22 No. 2, pp. 302-314. https://doi.org/10.1108/EJIM-02-2018-0051
46. Hussain, S. T., Lei, S., Akram, T., Haider, M. J., Hussain, S. H., & Ali, M. (2018). Kurt Lewin's change model: A critical review of the role of leadership and employee involvement in organizational change. Journal of Innovation & Knowledge, 3(3), 123–127. doi:10.1016/j.jik.2016.07.002
47. Imran, M., Ilyas, M., Aslam, U. and Fatima, T. (2018), "Knowledge processes and firm performance: the mediating effect of employee creativity", Journal of Organizational Change Management, Vol. 31 No. 3, pp. 512-531. https://doi.org/10.1108/JOCM-10-2016-0202
48. Jakhar, S. K., Mangla, S. K., Luthra, S., & Kusi-Sarpong, S. (2018). When stakeholder pressure drives the circular economy. Management Decision. doi:10.1108/md-09-2018-0990

Received: 22 Sep 2019 | Revised: 13 Oct 2019 | Accepted: 15 Jan 2020

49. Jaleel, S. and Verghis, A.M. (2015). Knowledge Creation in Constructivist Learning. Universal Journal of Educational Research 3(1): 8-12. doi: 10.13189/ujer.2015.030102.
50. Jiménez-Jiménez, D., & Sanz-Valle, R. (2011). Innovation, organizational learning, and performance. Journal of Business Research, 64(4), 408–417. doi:10.1016/j.jbusres.2010.09.010
51. Jou, M. Lin, Y. and Wu, D. (2016) Effect of a blended learning environment on student critical thinking and knowledge transformation, Interactive Learning Environments, 24:6, 1131-1147, DOI: 10.1080/10494820.2014.961485
52. Kagermann, H., Lukas, W.D., & Wahlster, W. (2013). Final report: Recommendations for implementing the strategic initiative INDUSTRIE 4.0. Industrie 4.0 Working Group. http://gateway-bayern.de/BV041628398
53. Kasim, A., Ekinci, Y., Altinay, L. and Hussain, K. (2018) Impact of market orientation, organizational learning and market conditions on small and medium-size hospitality enterprises, Journal of Hospitality Marketing & Management, 27:7, 855-875, DOI: 10.1080/19368623.2018.1438955
54. Kawamura, K. (2016), "Kristine Marin Kawamura, PhD interviews Ikujiro Nonaka, PhD", Cross Cultural & Strategic Management, Vol. 23 No. 4, pp. 613-632. https://doi.org/10.1108/CCSM-06-2014-0056
55. Khoshsorour, A., Gilaninia, S. 2018. Kuwait Chapter of the Arabian. Journal of Business and Management Review; Kuwait City 7(3): 1-4. doi: 10.12816/0048627
56. Kim, N. and Shim, C. (2018), "Social capital, knowledge sharing and innovation of small- and medium-sized enterprises in a tourism cluster", International Journal of Contemporary Hospitality Management, Vol. 30 No. 6, pp. 2417-2437. https://doi.org/10.1108/IJCHM-07-2016-0392
57. Lee, E.A. (2008,). Cyber physical systems: Design challenges. In Object Oriented Real-Time Distributed Computing (ISORC), 11th IEEE International Symposium, pp. 363-369. Doi: 10.1109/ISORC.2008.25
58. Lee, J.-C., Shiue, Y.-C., & Chen, C.-Y. (2016). Examining the impacts of organizational culture and top management support of knowledge sharing on the success of software process improvement. Computers in Human Behavior, 54, 462–474. doi:10.1016/j.chb.2015.08.030
59. Lee, Peter. (2019). Tacit Knowledge and University-Industry Technology Transfer. Research Handbook on Intellectual Property and Technology Transfer (2019, Forthcoming); UC Davis Legal Studies Research Paper Forthcoming. doi: http://dx.doi.org/10.2139/ssrn.3417933
60. Li, M., Liu, H. and Zhou, J. (2018), "G-SECI model-based knowledge creation for CoPS innovation: the role of grey knowledge", Journal of Knowledge Management, Vol. 22 No. 4, pp. 887-911. https://doi.org/10.1108/JKM-10-2016-0458
61. Li, Song, Wang, & Li. (2019). Intellectual Capital, Knowledge Sharing, and Innovation Performance: Evidence from the Chinese Construction Industry. Sustainability, 11(9), 2713. doi:10.3390/su11092713
62. Liebowitz, J. and Chen, Y. 2001. Developing knowledge-sharing proficiencies. Knowledge Management Review 3(6): 12-15. https://www.researchgate.net/publication/ 285908349_Developing_knowledge-sharing_proficiencies_Building_a_supportive_ culture_for_knowledge-sharing
63. Lievre, P. and Tang, J. (2015), "SECI and inter-organizational and intercultural knowledge transfer: a case-study of controversies around a project of co-operation between France and China in the health sector", Journal of Knowledge Management, Vol. 19 No. 5, pp. 1069-1086. https://doi.org/10.1108/JKM-02-2015-0054

Received: 22 Sep 2019 | Revised: 13 Oct 2019 | Accepted: 15 Jan 2020

64. Lin, C.-P. (2006). To Share or Not to Share: Modeling Tacit Knowledge Sharing, Its Mediators and Antecedents. Journal of Business Ethics, 70(4), 411–428. doi:10.1007/s10551-006-9119-0
65. Lin, H., Lee, Y. (2017). A Study of The Influence of Organizational learning on Employees' Innovative Behavior and Work Engagement by A Cross-Level Examination. Eurasia Journal of Mathematics, Science and Technology Education, 13(7), 3463-3478. https://doi.org/10.12973/eurasia.2017.00738a
66. Lombardi, R. (2019). Knowledge transfer and organizational performance and business process: past, present and future researches. Business Process Management Journal, 25(1), 2–9. doi:10.1108/bpmj-02-2019-368
67. Lund, H. B., & Karlsen, A. (2019). The importance of vocational education institutions in manufacturing regions: adding content to a broad definition of regional innovation systems. Industry and Innovation, 1–20. doi:10.1080/13662716.2019.1616534
68. Ma, Q., Mayfield, M. and Mayfield, J. (2018), "Keep them on-board! How organizations can develop employee embeddedness to increase employee retention", Development and Learning in Organizations, Vol. 32 No. 4, pp. 5-9. https://doi.org/10.1108/DLO-11-2017-0094
69. Malik, A. (2019). Creating competitive advantage through source basic capital strategic humanity in the industrial age 4.0. International Research Journal of Advanced Engineering and Science 4(1): 209-215. www.irjaes.com/pdf/V4N1Y18-IRJAES/IRJAES-V4N1P195Y19.pdf
70. Manaf, H. A., Armstrong, S. J., Lawton, A., & Harvey, W. S. (2017). Managerial Tacit Knowledge, Individual Performance, and the Moderating Role of Employee Personality. International Journal of Public Administration, 1–13. doi:10.1080/01900692.2017.1386676
71. Martínez-Costa, M., Jiménez-Jiménez, D., & Dine Rabeh, H. A. (2018). The effect of organisational learning on interorganisational collaborations in innovation: an empirical study in SMEs. Knowledge Management Research & Practice, 1–14. doi:10.1080/14778238.2018.1538601
72. Merkel, A. (2014). Speech by Federal Chancellor Angela Merkel to the OECD Conference. https://www.bundesregierung.de/Content/EN/Reden/2014/2014-02-19-oecd-merkel-paris_en.html, Accessed March 11, 2017
73. Mohajan, Haradhan (2016): Sharing of Tacit Knowledge in Organizations: A Review. Published in: American Journal of Computer Science and Engineering, Vol. 3, No. 2 (1 July 2016): pp. 6-19. https://mpra.ub.uni-muenchen.de/id/eprint/82958
74. Muñoz, C.A., Mosey, S. and Binks, M. (2015) The tacit mystery: reconciling different approaches to tacit knowledge. Knowledge Management Research & Practice, 13:3, 289-298, DOI: 10.1057/kmrp.2013.50
75. Muscio, A., & Ciffolilli, A. (2019). What drives the capacity to integrate Industry 4.0 technologies? Evidence from European R&D projects. Economics of Innovation and New Technology, 1–15. doi:10.1080/10438599.2019.1597413
76. Muthuveloo, R., Shanmugam, N., & Teoh, A. P. (2017). The impact of tacit knowledge management on organizational performance: Evidence from Malaysia. Asia Pacific Management Review, 22(4), 192–201. doi:10.1016/j.apmrv.2017.07.010
77. Naqshbandi, M., Tabche, I. and Choudhary, N. (2019), Managing open innovation: The roles of empowering leadership and employee involvement climate, Management Decision, Vol. 57 No. 3, pp. 703-723. https://doi.org/10.1108/MD-07-2017-0660

Received: 22 Sep 2019 | Revised: 13 Oct 2019 | Accepted: 15 Jan 2020

78. Nonaka I., Hirose Nishihara A. (2018) Introduction to the Concepts and Frameworks of Knowledge-Creating Theory. In: Hirose Nishihara A., Matsunaga M., Nonaka I., Yokomichi K. (eds) Knowledge Creation in Community Development. Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-319-57481-3_1
79. Nonaka I., Toyama R. (2015) The Knowledge-creating Theory Revisited: Knowledge Creation as a Synthesizing Process. In: Edwards J.S. (eds) The Essentials of Knowledge Management. OR Essentials Series. Palgrave Macmillan, London. https://doi.org/10.1057/9781137552105_4
80. Norwich, B., Koutsouris, G., Fujita, T., Ralph, T., Adlam, A. and Milton, F. (2016), "Exploring knowledge bridging and translation in lesson study using an inter-professional team", International Journal for Lesson and Learning Studies, Vol. 5 No. 3, pp. 180-195. https://doi.org/10.1108/IJLLS-02-2016-0006
81. Nugroho, M. (2018), "The effects of collaborative cultures and knowledge sharing on organizational learning", Journal of Organizational Change Management, Vol. 31 No. 5, pp. 1138-1152. https://doi.org/10.1108/JOCM-10-2017-0385
82. Okuyama, R. (2017), "Importance of tacit knowledge in incremental innovation: Implications from drug discovery cases", Journal of Strategy and Management, Vol. 10 No. 1, pp. 118-130. https://doi.org/10.1108/JSMA-02-2016-0016
83. Parida, V., Sjödin, D., & Reim, W. (2019). Reviewing Literature on Digitalization, Business Model Innovation, and Sustainable Industry: Past Achievements and Future Promises. Sustainability, 11(2), 391. doi:10.3390/su11020391
84. Pérez-Fuillerat, N., Solano-Ruiz, M. C., & Amezcua, M. (2018). Conocimiento tácito: características en la práctica enfermera. Gaceta Sanitaria. doi:10.1016/j.gaceta.2017.11.002
85. Pérez-Luño, A., Alegre, J., & Valle-Cabrera, R. (2018). The role of tacit knowledge in connecting knowledge exchange and combination with innovation. Technology Analysis & Strategic Management, 1–13. doi:10.1080/09537325.2018.1492712
86. Pérez-Luño, A., Alegre, J., & Valle-Cabrera, R. (2018). The role of tacit knowledge in connecting knowledge exchange and combination with innovation. Technology Analysis & Strategic Management, 1–13. doi:10.1080/09537325.2018.1492712
87. Polanyi, M. (1966). The Tacit dimension. New York: Doubleday & Co.
88. Prasarnphanich, P., Janz, B. and Patel, J. (2016), "Towards a better understanding of system analysts' tacit knowledge: A mixed method approach", Information Technology & People, Vol. 29 No. 1, pp. 69-98. https://doi.org/10.1108/ITP-06-2014-0123
89. Prasetyo, B. and Trisyanti, U. (2018). Revolusi industri 4.0 dan tantangan perubahan sosial. Prosiding SEMATEKSOS 3 "Strategi Pembangunan Nasional MenghadapiRevolusiIndustri 4.0". 22-27. DOI: http://dx.doi.org/10.12962/j23546026.y2018i5.4417
90. Prasetyo, H., & Sutopo, W. (2018). Industri 4.0: telaah klasifikasi aspek dan arah perkembangan riset. J@ti Undip : Jurnal Teknik Industri. 13(1): 17-26. https://doi.org/10.14710/jati.13.1.17-26
91. Qi, C. and Chau, P.Y.K. (2018) Will enterprise social networking systems promote knowledge management and organizational learning? An empirical study, Journal of Organizational Computing and Electronic Commerce, 28:1, 31-57, DOI: 10.1080/10919392.2018.1407081
92. Razmerita L., Phillips-Wren G., Jain L.C. (2016) Advances in Knowledge Management: An Overview. In: Razmerita L., Phillips-Wren G., Jain L. (eds) Innovations in Knowledge Management. Intelligent

Systems Reference Library, vol 95. Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-662-47827-1_1

93. Rothberg, H. and Erickson, G. (2017), "Big data systems: knowledge transfer or intelligence insights?", Journal of Knowledge Management, Vol. 21 No. 1, pp. 92-112. https://doi.org/10.1108/JKM-07-2015-0300
94. Ruiz-Torres, A., Cardoza, G., Kuula, M., Oliver, Y. and Rosa-Polanco, H. (2018), "Logistic services in the Caribbean region: An analysis of collaboration, innovation capabilities and process improvement", Academia Revista Latinoamericana de Administración, Vol. 31 No. 3, pp. 534-552. https://doi.org/10.1108/ARLA-03-2017-0078
95. Rumanti, A. A., Samadhi, T. M. A. A., Wiratmadja, I. I., & Sunaryo, I. (2018). A systematic literature review on knowledge sharing for innovation: Empirical study approach. 5th International Conference on Industrial Engineering and Applications (ICIEA). doi:10.1109/iea.2018.8387153
96. Rumanti, A. A., Wiratmadja, I. I., Sunaryo, I., Ajidarma, P., & Ari Samadhi, T. M. A. (2019). Firm Innovation capability through Knowledge Sharing at Indonesian Small and Medium Industries: Impact of Tacit and Explicit Knowledge Perspective. 2019 IEEE 6th International Conference on Industrial Engineering and Applications (ICIEA). doi:10.1109/iea.2019.8714947
97. Samsir, S. (2018), The effect of leadership orientation on innovation and its relationship with competitive advantages of small and medium enterprises in Indonesia, International Journal of Law and Management, Vol. 60 No. 2, pp. 530-542. https://doi.org/10.1108/IJLMA-01-2017-0005
98. Santoro, G., Vrontis, D., Thrassou, A., & Dezi, L. (2017). The Internet of Things: Building a knowledge management system for open innovation and knowledge management capacity. Technological Forecasting and Social Change. doi:10.1016/j.techfore.2017.02.034
99. Sasaki, Y. (2017), "A note on systems intelligence in knowledge management", The Learning Organization, Vol. 24 No. 4, pp. 236-244. https://doi.org/10.1108/TLO-09-2016-0062
100. Schlechtendahl, J., Keinert, M., Kretschmer, F., Lechler, A., & Verl, A. (2015). Making existing production systems Industry 4.0-ready. Production Engineering. 9(1): 143-148. doi: 10.1007/s11740-014-0586-3
101. Schuckert, M., Kim, T., Paek, S. and Lee, G. (2018), "Motivate to innovate: How authentic and transformational leaders influence employees' psychological capital and service innovation behavior", International Journal of Contemporary Hospitality Management, Vol. 30 No. 2, pp. 776-796. https://doi.org/10.1108/IJCHM-05-2016-0282
102. Serna M., E., Bachiller S., O., & Serna A., A. (2017). Knowledge meaning and management in requirements engineering. International Journal of Information Management, 37(3), 155–161. doi:10.1016/j.ijinfomgt.2017.01.005
103. Simao, L. and Franco, M. (2018). External knowledge sources as antecedents of organizational innovation in firm workplaces: a knowledge-based perspective. Journal of Knowledge Management. 22(2): 237-256. https://doi.org/10.1108/JKM-01-2017-0002
104. Sousa, M. J., & Rocha, Á. (2019). Strategic Knowledge Management in the Digital Age. Journal of Business Research. 94: 223–226. doi:10.1016/j.jbusres.2018.10.016

105. Spraggon, M. and Bodolica, V. (2017). Collective tacit knowledge generation through play: Integrating socially distributed cognition and transactive memory systems. Management Decision. 55(1): 119-135. https://doi.org/10.1108/MD-05-2015-0173
106. Stachová, K., Papula, J., Stacho, Z., & Kohnová, L. (2019). External Partnerships in Employee Education and Development as the Key to Facing Industry 4.0 Challenges. Sustainability. 11(2): 345. doi:10.3390/su11020345
107. Stanica, S. and Peydro, J. (2016), "How does the employee cross-training lean tool affect the knowledge transfer in product development processes?", VINE Journal of Information and Knowledge Management Systems, Vol. 46 No. 3, pp. 371-385. https://doi.org/10.1108/VJIKMS-11-2015-0061
108. Starbuck, W. (2017). Organizational learning and unlearning. The Learning Organization. 24(1): 30-38. https://doi.org/10.1108/TLO-11-2016-0073
109. Stewart, C., Schiavon, L.M. and Bellotto, M.L. (2017) Knowledge, nutrition and coaching pedagogy: a perspective from female Brazilian Olympic gymnasts, Sport, Education and Society, 22(4): 511-527. Doi: 10.1080/13573322.2015.1046428
110. Swierczek, A. (2019), "Manufacturer structural embeddedness and the network rent: the intervening role of relational embeddedness in the triadic supply chains", Supply Chain Management, Vol. 24 No. 3, pp. 334-354. https://doi.org/10.1108/SCM-06-2018-0232
111. Tang, V., Yanine, F. and Valenzuela, L. (2016), "Data, information, knowledge and intelligence: The mega-nano hypothesis and its implications in innovation", International Journal of Innovation Science, Vol. 8 No. 3, pp. 199-216. https://doi.org/10.1108/IJIS-07-2016-0022
112. Terhorst, A., Lusher, D., Bolton, D., Elsum, I., & Wang, P. (2018). Tacit Knowledge Sharing in Open Innovation Projects. Project Management Journal, 49(4), 5–19. doi:10.1177/8756972818781628
113. Thomas, N. (2019), "Two aspects of knowledge transfer: what every manager should know about using analogy and narrative", Development and Learning in Organizations, Vol. 33 No. 1, pp. 12-15. https://doi.org/10.1108/DLO-04-2018-0046
114. Torres, O. J. J., & Liang, D. (2016). Knowledge Sharing and the Innovation capability of Chinese Firms: The Role of Guanxi. 2016 International Conference on Industrial Engineering, Management Science and Application (ICIMSA). doi:10.1109/icimsa.2016.7504015
115. Tsai, F. and Hsu, I. (2019), "The effects of social capital on knowledge heterogeneity", Management Decision, Vol. 57 No. 5, pp. 1237-1253. https://doi.org/10.1108/MD-12-2016-0909
116. Urban, B. and Gaffurini, E. (2018), "Social enterprises and organizational learning in South Africa", Journal of Entrepreneurship in Emerging Economies, Vol. 10 No. 1, pp. 117-133. https://doi.org/10.1108/JEEE-02-2017-0010
117. Vijande M.L.S., Sánchez J.Á.L. (2017) The Effects of Organizational learning on Innovation and Performance in Kibs: An Empirical Examination. In: Campbell C.L. (eds) The Customer is NOT Always Right? Marketing Orientationsin a Dynamic Business World. Developments in Marketing Science: Proceedings of the Academy of Marketing Science. Springer, Cham. https://doi.org/10.1007/978-3-319-50008-9_227
118. Villaluz, V. and Hechanova, M. (2019), "Ownership and leadership in building an innovation culture", Leadership & Organization Development Journal, Vol. 40 No. 2, pp. 138-150. https://doi.org/10.1108/LODJ-05-2018-0184

Received: 22 Sep 2019 | Revised: 13 Oct 2019 | Accepted: 15 Jan 2020

119. Wang, C., Chen, M. and Chang, C. (2019), "The double-edged effect of knowledge search on innovation generations", European Journal of Innovation Management, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/EJIM-04-2018-0072
120. Wang, J., & Liu, L. (2019). Study on the mechanism of customers' participation in knowledge sharing. Expert Systems, e12367. doi:10.1111/exsy.12367
121. Wang, X., Arnett, D. and Hou, L. (2016), "Using external knowledge to improve organizational innovativeness: understanding the knowledge leveraging process", Journal of Business & Industrial Marketing, Vol. 31 No. 2, pp. 164-173. https://doi.org/10.1108/JBIM-04-2014-0064
122. Wang, Z., & Wang, N. (2012). Knowledge sharing, innovation and firm performance. Expert Systems with Applications, 39(10), 8899–8908. doi:10.1016/j.eswa.2012.02.017
123. Wetzel R., Tint B. (2019) Using Applied Improvisation for Organizational learning in the Red Cross Red Crescent Climate Centre. In: Antonacopoulou E., Taylor S. (eds) Sensuous Learning for Practical Judgment in Professional Practice. Palgrave Studies in Business, Arts and Humanities. Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-319-99049-1_3
124. Wójcik, M., Jeziorska-Biel, P., & Czapiewski, K. (2019). Between words: A generational discussion about farming knowledge sources. Journal of Rural Studies, 67, 130–141. doi:10.1016/j.jrurstud.2019.02.024
125. Xu, M., David, J. M., & Kim, S. H. (2018). The Fourth Industrial Revolution: Opportunities and Challenges. International Journal of Financial Research, 9(2), 90. doi:10.5430/ijfr.v9n2p90
126. Yang, Z., Nguyen, V. and Le, P. (2018), Knowledge sharing serves as a mediator between collaborative culture and innovation capability: an empirical research, Journal of Business & Industrial Marketing, Vol. 33 No. 7, pp. 958-969. https://doi.org/10.1108/JBIM-10-2017-0245
127. Zambon, I., Cecchini, M., Egidi, G., Saporito, M. G., & Colantoni, A. (2019). Revolution 4.0: Industry vs. Agriculture in a Future Development for SMEs. Processes, 7(1), 36. doi:10.3390/pr7010036
128. Zebal, M., Ferdous, A., & Chambers, C. (2019). An integrated model of marketing knowledge – a tacit knowledge perspective. Journal of Research in Marketing and Entrepreneurship. doi:10.1108/jrme-03-2018-0018
129. Zhang, C., Xiao, H., Gursoy, D. and Rao, Y. (2015). Tacit knowledge spillover and sustainability in destination development. Journal of Sustainable Tourism, 23:7, 1029-1048, DOI: 10.1080/09669582.2015.1032299
130. Zhu, Q., Krikke, H. and Caniëls, M. (2018), Supply chain integration: value creation through managing inter-organizational learning. International Journal of Operations & Production Management, Vol. 38 No. 1, pp. 211-229. https://doi.org/10.1108/IJOPM-06-2015-0372
131. Zouaghi, F., Sánchez, M., & Martínez, M. G. (2018). Did the global financial crisis impact firms' innovation performance? The role of internal and external knowledge capabilities in high and low tech industries. Technological Forecasting and Social Change, 132, 92–104. doi:10.1016/j.techfore.2018.01.011