Jurnal Manajemen & Agribisnis, Vol. 19 No. 1, March 2022
Permalink/DOI: http://dx.doi.org/10.17358/jma.19.1.152

Available online at
http://journal.ipb.ac.id/index.php/jmagr

STRATEGY FOR KNOWLEDGE MANAGEMENT SUSTAINABILITY: A LESSON FROM THE INDUSTRIAL AUTOMATION UNIT

Dian Purnomo Adi[*)][1], Idqan Fahmi[*)], Mukhamad Najib[**)]

[*)]School of Business, IPB University
Jl. Pajajaran Bogor 16151, Indonesia
[**)]Department of Management, Faculty of Economics and Management, IPB University
Jl. Agatis, IPB Dramaga Campus 16680 Bogor, Indonesia

Abstract: Organizational knowledge is a combination of individual's knowledge within the organization. Specialize individual knowledge is developed inside the organization. Therefore, it should belong to the organization and be stored in the organization. The Industrial Automation (IA) department implements simple knowledge management (KM) in the form of a web blog. However, the KM implementation becomes inconsistent. This inconsistency can lead to knowledge loss and knowledge gaps if there are individual changes within the organization. This study aims to analyze the condition of the IA department's KM, analyze the factors that affect the sustainability of IA's KM and formulate strategies for the sustainability of IA's KM. The analysis of KM is carried out with the following factors: culture, training and development, reward, performance system, and technology. Supervisor's order is still something that can help to build the knowledge-sharing habit. Employees do not get training regularly. Employees feel that they have not received good appreciation for the knowledge sharing and have not been included in the performance appraisal. Technology has been well adopted in KM. SEM-PLS analysis shows that training and development is a significant factor of KM sustainability. SEM-PLS result and content analysis construct managerial implication and KM sustainability strategies formula: develop a yearly training plan, establish problem-solving forum, and improving KMS implementation.

Keywords: content analysis, knowledge management, SEM-PLS, sustainability, training

Abstrak: *Pengetahuan organisasi adalah kombinasi dari pengetahuan individu-individu di dalam organisasi. Pengetahuan khusus yang berkembang di dalam organisasi menjadi milik organisasi dan disimpan di dalam organisasi. Departemen Industrial Automation (IA) telah menerapkan manajemen pengetahuan sederhana. Namun demikian, pelaksanaan manajemen pengetahuan menjadi tidak konsisten. Hal ini menyebabkan knowledge loss dan knowledge gap jika terjadi perubahan individu dalam organisasi. Penelitian ini bertujuan untuk menganalisis kondisi manajemen pengetahuan IA, menganalisis faktor-faktor yang memengaruhi keberlanjutan system manajemen pengetahuan IA, dan merumuskan strategi keberlanjutan manajemen pengetahuan IA. Analisis dilakukan dengan menggunakan faktor: budaya, pelatihan dan pengembangan, penghargaan, sistem kinerja, dan teknologi. Analisis SEM-PLS memberikan hasil variabel pelatihan dan pengembangan signifikan berpengaruh pada keberlanjutan manajemen pengetahuan. implikasi manajerial dan strategi keberlanjutan manajemen pengetahuan berupa: membuat rencana pelatihan karyawan tahunan, membentuk forum problem solving, dan memperbaiki sistem manajemen pengetahuan.*

Kata kunci: *analisis isi, manajemen pengetahuan, SEM-PLS, keberlanjutan, pelatihan*

[1] Corresponding author:
Email: dadi@fmi.com

INTRODUCTION

Knowledge management (KM) has a positive impact on organization performance (Kordab et al. 2020; Rasula et al. 2012; Sahibzada et al. 2019; Schiuma 2012) and knowledge worker productivity (Kaldeen et al. 2021; Kianto et al. 2019). Knowledge gives strength to encounter, manage, solve individual or organizational problems. Effective use of knowledge can develop unique capabilities, improve management decision quality to increase customer service and satisfaction (Tzortzaki, 2014; Polyanska and Malynka, 2014). Knowledge loss has a negative impact on decreased work quality and quantity, delayed task completion, customer mistrust, declined capacity to manage risk and decreased new technology absorption capacity (Massingham, 2018) (Lin et al.2016).

Unlike another mining or oil and gas owner, whose automation is supplied by a vendor, PT Freeport Indonesia establishes its own automation department. IA department runs automation for 125 kilotons per day mined rock (ore) processed to copper and gold concentrate in PT Freeport Indonesia. The basic knowledge of control, programming, network, and database are mastered by IA employees' educational backgrounds. Over time, unique and specialized knowledge are evolved inside the organization.

Individual change inside an organization leads to knowledge loss and knowledge gaps. Due to the knowledge gap, the processing plant experienced an incident in 2019, which should be avoidable. The same incident was experienced in 2016, and corrective action had been taken. A belt conveyor was almost buried by ore. Current reading and alarm can indicate almost buried condition. The alarm was set properly in 2016, but then higher due to motor upgrades between 2016 and 2019. IA also experienced some delayed tasks completion due to depending on certain person who has good knowledge about a certain equipment or tools. IA is migrating the process display to the newest software. It is a completely different technology. There is only one person who understand how to configure the display. The task delivery is delayed when the person is on scheduled vacation.

Komara (2014) conducted pre-research on KM implementation in Concentrating Division PTFI. There are five departments that already implement simple KM from 14 departments. Therefore, there is no department which had well-implemented KM. IA is one of those five departments. IA's KM is a shared folder, web blog, and wiki. Share folder is IA's oldest knowledge storage and establishes around 2000. IA web blog and wiki were introduced in 2007. In June 2020, the web blog author was only 31,8% of the employee, way below 100% employee target, and the last wiki update was 2010.

Knowledge can be obtained from written documents and experience. There are two types of knowledge, named tacit and explicit. Tacit knowledge is knowledge embedded inside the individual. Explicit knowledge is documented and easy to transfer knowledge. Tacit and explicit knowledge are transformable through SECI (Socialization Externalization Combination Internalization) (Nonaka and Takeuchi, 1995).

KM components are people, process, and technology (Bhatt, 2000) (Febriantoro & Surendro, 2015) (Intezari et al. 2017). People are the knowledge subject. Organizational knowledge is gathered, developed, and shared with its human resource (HR). The process is a way to manage knowledge. The process can be related to knowledge transformation due to organization or business process change. Technology is a tool to manage knowledge. Technology should simplify the KM process implementation.

Jackson et al. (2003) explain KM and HR relationship. KM behavior needs competencies, motivation, and opportunities on its HR. The HR management supports are work design, staffing, performance measurement, training and development, rewards, and organizational culture. Armstrong (2014) reveals HR contribution to KM. They are knowledge sharing culture, reward, performance appraisal system focused on knowledge development and sharing, training, conference, knowledge sharing based on the community of practice. Training in the workplace has gradually changed from a less-individualize focus (e.g., on-the-job, mentoring) to more formal training delivered by the trainer (classroom, seminar, workshop) (Sprinkle and Urick, 2018).

Alavi and Liedner (2001) introduce four KM processes within the organization: knowledge creation, knowledge storage, knowledge transfer, and knowledge application. Febriantoro and Surendro (2015) successfully adopted this process model in the teaching material design. Socialization is the most important factor of knowledge

transfer (Dahou et al. 2019; Sprinkle and Urick, 2018). Contents for knowledge sharing are lessons learned, project experience, and success stories (McInerney and Koenig, 2011; Tzortzaki, 2014). Knowledge transfer is affected by opportunity and culture (Shabrina and Silvianita, 2015).

Igbinovia and Ikenwe (2107) explain various technologies that aids KM practice. Those technologies are knowledge portal, database management system, e-mail, group wares, data warehouse, and content management system.

Jokanovic et al. (2020) reveal that KM is affected by organization culture and supervisor. Supervisor need to promote the importance of KM for organization sustainability. Culture influences knowledge process by group level and organization level (Intezari *et al.* 2017). Mojibi et al. (2015) also confirming that there is relation between KM and culture.

Rabhi (2011) use key performance indicator metric to achieve the KM sustainability. KM result is measured through work performance. KM contents are technical report that consist of recommendation, problem statement, failure, success, and lesson learned.

This study aims to: (1) analyze the current condition of the IA department's KM, (2) analyze the factors that affect the sustainability of IA's KM, and (3) formulate strategies for the sustainability of IA's KM.

METHODS

This research is using descriptive analysis for assessing current IA's KM condition. This research is also using SEM-PLS to assess factors affecting IA's KM sustainability. Various type of model describing relationship among observed variables can be build using SEM (Schumacker and Lomax, 2004). SEM-PLS can be used when a small population restrics the sample size or it has distribution issue (Hair *e*et al. 2019). The assessment is based on knowledge sharing culture, training and development, reward, performance appraisal, and technology. Content analysis of respondent aspiration is used to support SEM-PLS results on the strategy formulation. SEM-PLS variables and reflective indicators are presented in Table 1. Research hypothesis is used to build the SEM-PLS model:

H1 : sharing culture has significant effect to IA's knowledge management sustainability
H2 : training and development have significant effect to IA's knowledge management sustainability
H3 : reward has significant effect to IA's knowledge management sustainability
H4 : worksystem culture has significant effect to IA's knowledge management sustainability
H5 : technology has significant effect to IA's knowledge management sustainability

Table 1. Latent variables and reflective indicators definition

Latent Variables	Reflective Indicators	Definition
Sharing Culture	(sc1) habit	Habit of sharing knowledge
	(sc2) supervisor instruction	Supervisor instruction effect
	(sc3) Externalization	Tacit to explicit knowledge transformation
Training and development	(td1) Opportunity	opportunity to get knowledge formally
	(td2) Event	Formal/class knowledge transfer
	(td3) Routine	Scheduled, periodic
	(td4) new knowledge in work	Discover/find new knowledge during work activity
Reward	(rw1) Reward	Appreciation, reward, gift, compensation
Work system	(ws1) work performance appraisal	PTFI KRA/KPI appraisal
	(ws2) career development	Higher job level promotion
Technology	(tc1) systematic storage	Structured knowledge storage
	(tc2) simple access	Easy to find knowledge documentation
KM sustainability	(km1) developed knowledge	Always find/get new knowledge
	(km2) individual intellectual property	Personal individual intellectual property
	(km3) useful in work	Supporting job quality or quantity
	(km4) excellence	Outstanding performance compare to others

The data collection and questionnaire research were conducted at PTFI IA's office at milepost 74, Tembagapura, Papua, within July 2020 to April 2021. All IA employees took part in this research. Other respondents were sampled from IA customers list using simple random sampling. The total population is 134 employees. Total respondents are 50 employees, based on Hair et al. (2011) SEM-PLS sample criteria: ten times of structural path number in latent construct or ten times of biggest formative indicators in a construct. This research uses smartPLS 3.3.3 software.

The questionnaire consists of closed and open questions. Closed questions use five scale Likert. The open question aims to get aspiration for the KM. The offline questionnaire is used so users can think deeply before answering the open question. SEM -PLS criteria used in this research are: outer loading of reflective indication is more than 0.4 (Hair et al. 2012; Sarwono, 2012), convergent validity by average variance extracted (AVE) is more than 0.5 (Hair et al. 2012; Sarwono, 2012), discriminant validity by Fornell-Larcker criteria, and reliability by cronbach's alpha and composite reliability is 0.7 (Sarwono, 2012). Structural model evaluation is conducted by evaluating r^2 and path coefficient. SmartPLS bootstrapping is used to get the path coefficient. The significance level uses a common p-value limit, which is 0,05.

Free web-based voyant-tools software is used for content analysis (Sinclair and Rockwell, 2021). Voyant-tools has various qualitative analysis methods (Hetenyi et al. 2019). This research use voyant-tools' scatter plot. Refer to Hetenyi et al. (2019), scatter plot settings are using tf-idf (term frequency-inverse document frequency) as input, t-SNE (t-distributed Stochastic Neighbor Embedding) as analysis. t-SNE is set at 50 perplexity and 1500 iterations. Research framework in Figure 1.

RESULTS

IA's KM Current Condition

Knowledge-sharing culture is part of IA. Supervisor instruction has an important role in this culture, confirming Jokanovic et al. (2020). The supervisor needs to give opportunity or specific instruction to share certain knowledge. Knowledge is shared by the informal socialization method, e.g., informal talk, incidental questions, and answer. This method possibly leads to IA knowledge deterioration because it only involves few people and there is no knowledge externalization in the organization. The concept of knowledge externalization has no coherent base theory, and many projects are reported to have limited success (Virtanen, 2011). Informal mentoring has a positive impact for organization specific knowledge (Roobol and Koster, 2020). Carcel-Carrasco et al. (2020) also highlighting the massive use of informal knowledge transfer, which makes difficult to share into other organization members.

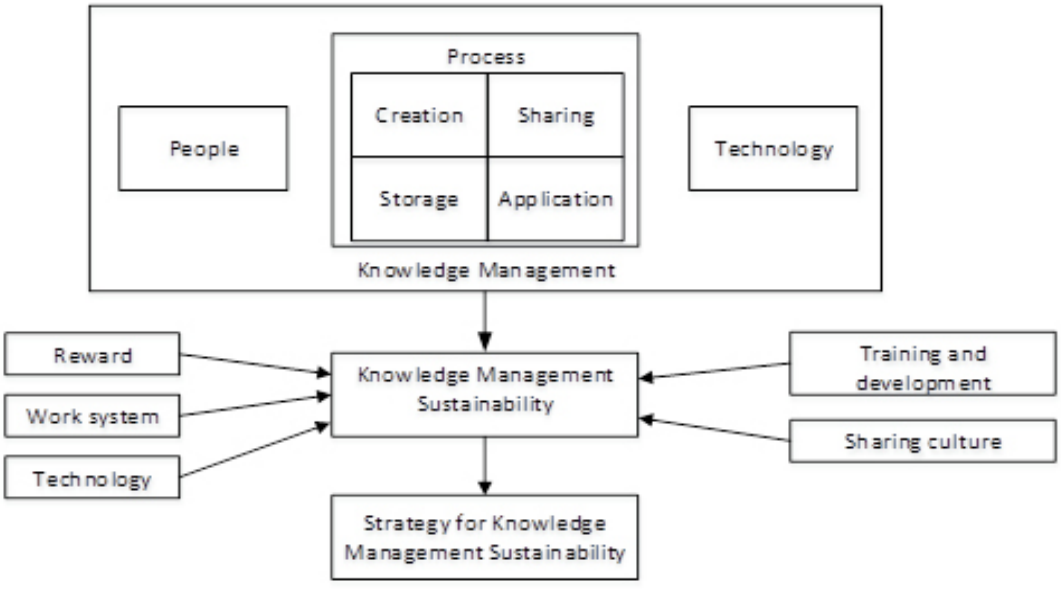

Figure 1. Research framework

IA employees have good training opportunity. Supervisor and Concentrating division management give training opportunity by Personal Development Plan (PDP) which is integrated in work performance appraisal. However, the training events are not always available. Moreover, the PDP evaluation is not run as expected. Therefore, employee development and training are not routine. Despite that, employees find new knowledge in the work activity. Both off the job and on the job training and development produce tacit and explicit knowledge that can boost organization performance (Boadu et al. 2018).

Employee feel that they have not received a proper reward for their shared knowledge. There is no agreed reward system between supervisors or management and employees. The employee expects different reward than given by supervisor or management. Social reward or non-financial is more important compare to monetary/financial reward (Häusler et al. 2015; Lwanga and Ngulube, 2019). Related to most knowledge sharing is delivered informally, it may contribute to the lack of formal appreciation from the organization. Therefore, if employees expect an organization's reward, there should be formal knowledge sharing or knowledge externalization.

Knowledge is not part of the work system. Work appraisal is only based on work achievement. Although knowledge an impacts work quality and quantity (Massingham, 2018), knowledge is not directly measured in the work appraisal. In spite of that, employees believe that knowledge has a positive impact on their careers. The actual data of work service year and job level show a strong correlation. The Spearman correlation value is 0,807. Work service year may reflect the special knowledge developed inside the organization. Ahmad et al. (2019) also found that competency is a significant predictor of career success, with the mediation of career resilience.

IA has been well implementing the technology for the KM. Current technology implementation help for the systematic storage arrangement and simplicity of access. Besides share folder, web blog, and wiki, which is mentioned in the introduction, IA is adopting another technology lately. In 2019, IA started to adopt MS teams. MS team's usage becomes more common in 2021. At the end of 2020, IA started to adopted SharePoint to store the knowledge. Al-Alma (2014) use the taxonomy model to structured knowledge gathered from a lot of employees spread in many branch offices, which is the integration of web and SharePoint.

Employee's knowledge is developed well inside the organization. The employee believes that the knowledge developed inside the organization is not individual intellectual property, but belong to the organization. However, the organization should acknowledge that the individual is the legitimate and foremost owner of the knowledge (Rechberg and Syed 2013). The employee, also believes that knowledge is useful and brings excellence to the workplace. Moreover, it also can obtain user trust in certain job exclusively to certain people. Proper knowledge and information management bring positive effects on work actions (Carcel-Carrasco et al. 2020).

IA's KM Sustainability Factors

IA's KM SEM-PLS model is constructed based on the research framework. The initial model is showed in Figure 2. The model performs a series of indicator, convergent, discriminant, and reliability tests. The test value is presented in Table 2.

During the indicator validity test, the sharing culture reflective indicator of knowledge externalization (sc3) is failed. It's outer loading value is 0.244, below the 0.4 outer loading limit. After model adjustment, convergent validity is performed to the model by evaluating the AVE value and discriminant validity by Fornell-Larcker criteria. All variables are valid based on both validity tests. During the reliability test, sharing culture and work system are failed. Table 2 shows that both variables have cronbach's alpha value less than 0.7, despite their composite reliability value more than 0.7. The final model is showed in Figure 3. The final model r^2 is 44.6%, which means the model can explain 44,6% of IA's KM sustainability, while 55.4% of the factor is outside of this research.

SEM-PLS bootstrapping, shown in Table 3, reveals only one significant variable for IA's KM sustainability whose p-value is <0.05: training and development. Training and development are part of the knowledge creation process. Since the parth coefficient is positive, it means that knowledge needs to be continuously renewed to ensure the IA's KM sustainability. Most of the respondent age is between 25 – 35 years old (60%), which is Y generation. According to Naim and Lenka (2018), mentoring, strategic leadership, social media, and knowledge sharing are important for Y generation competency development.

Table 2. Indicator validity, convergent validity, dan reliability test

Laten Validity	Reflective Indicator	Outer Loading	AVE	Cronbach's Alpha	Composite Reliability
Sharing culture	(sc1) habit	0,660	0,598	0,336	0,746
	(sc2) supervisor instruction	0,851			
	(sc3) Externalization	0,244			
Training and Development	(td1) Opportunity	0,806	0,509	0,707	0,804
	(td2) Event	0,702			
	(td3) Routine	0,613			
	(td4) new knowledge in work	0,719			
Reward	(rw1) Reward	1,000	1,000	1,000	1,000
Work system	(ws1) work performance appraisal	0,822	0,745	0,664	0,854
	(ws2) career development	0,903			
Technology	(tc1) systematic storage	0,962	0,913	0,905	0,954
	(tc2) simple access	0,949			
KM sustainability	(km1) developed knowledge	0,739	0,590	0,752	0,845
	(km2) individual intellectual property	0,456			
	(km3) useful in work	0,868			
	(km4) excellence	0,923			

Table 3. SEM-PLS final model bootstrapping

Laten Validity	Reflective Indicator	Outer Loading	AVE	Cronbach's Alpha	Composite Reliability
Training and Development	(td1) Opportunity	0,808	0,000	0,455	0,003
	(td2) Event	0,699	0,000		
	(td3) Routine	0,610	0,005		
	(td4) new knowledge in work	0,721	0,001		
Reward	(rw1) Reward	N/A	N/A	0,213	0,104
Technology	(tc1) systematic storage	0,962	0,000	0,210	0,109
	(tc2) simple access	0,948	0,000		

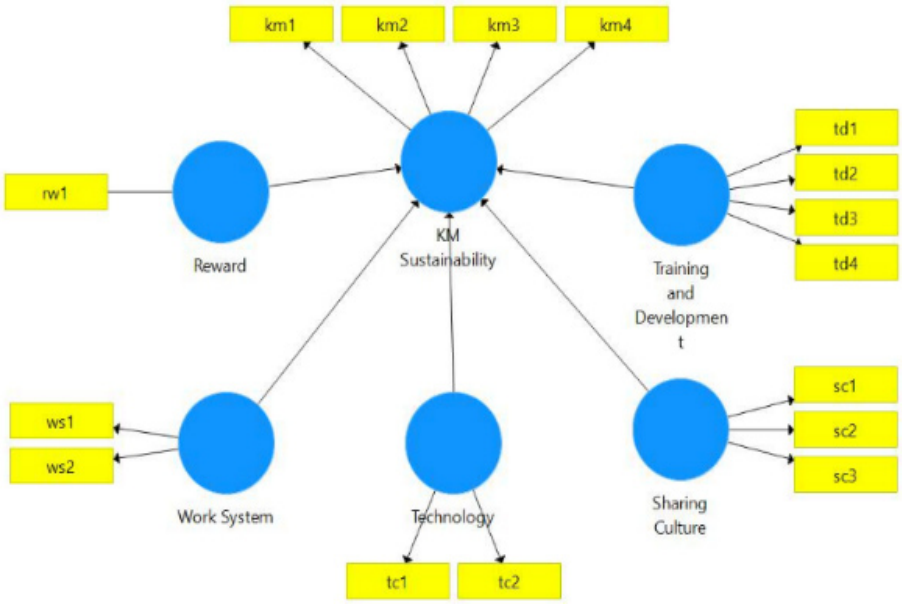

Figure 2. SEM-PLS initial model

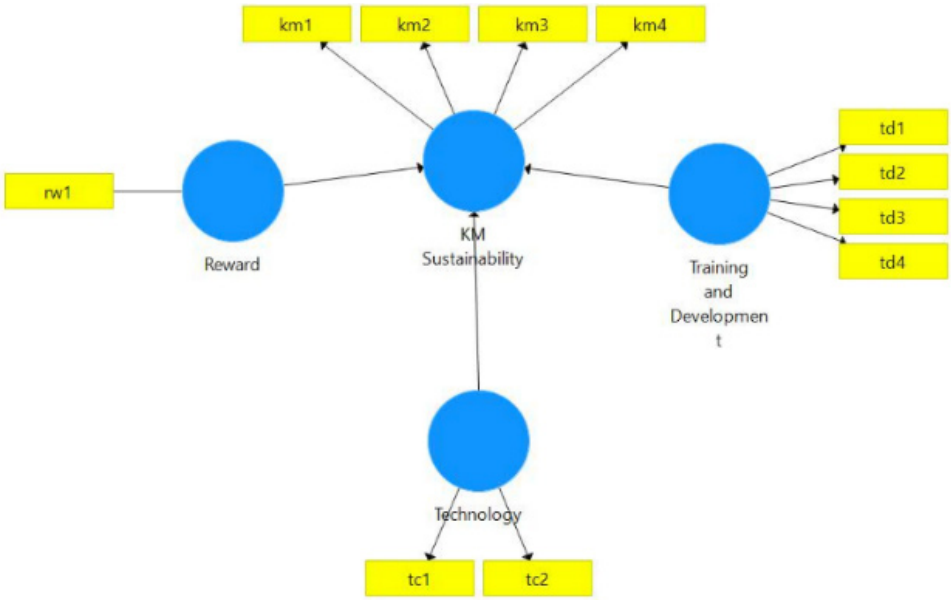

Figure 3. SEM-PLS final model

The training and development has significant effect on the IA KM sustainability. It needs to be carried out regularly. PTFI has a well-run safety and leadership training program. A similar program may be conducted for professional knowledge. Training for new skills and knowledge is expected by the most employee (Pozas and Jauregui, 2012). However, training evaluation needs to be also conducted. Most of evaluation is at training planned action, learning, and job application, but rarely evaluate for business impact and return on investment (Mehale et al. 2021).

Reward have no significant effect on the IA KM sustainability. There is no value in this research indicator because this research is only use one reflective indicator for this latent variable. Said (2012) also revealed an insignificant effect between motivation (reward) and knowledge sharing effectivity. Youssef et al. (2017) find moderate relationship between knowledge sharing and reward system. Durmusoglu et al. (2014) suggest that combination of culture and reward are significant for knowledge sharing and gaining which can resulting sustained superior performance.

PTFI provides formal appreciation for outstanding safety performance employee. The formal appreciation is expressed in the form of written appreciation by company group e-mail, souvenir delivery in weekly manager meetings, or monthly safety meetings. This kind of company formal appreciation is unavailable for the knowledge subject. The knowledge formal appreciation is only delivered in IA internal department.

Since knowledge is shared by informal socialization, there is no physical evidence to deliver the formal reward. However, without formal reward, employees keep sharing the tacit knowledge with certain person or groups. Thus make reward has insignificant effect on KM sustainability. Further, due to this informal event, the organization cannot control distributing knowledge to all IA members.

Technology have no significant effect on the IA's KM sustainability. Fernandes (2018) revealed that technology has positive effect on knowledge asset but no significant effect on KM. Shafiee et al. (2020) find significant and negative relationship between technology and KM. At 2007, e-mail and share folder are only KM technology available in PTFI. Then IA launched web blog and wiki to store and distribute knowledge. In the following years, PTFI provide more technological platform which can be utilized as knowledge storage and distribution: Yammer, SharePoint, and MS Teams. But there is no integration on those available platforms. Moreover, IA has no platform usage standard yet. Current IA's technology adoption is initiated and enforced by IA leaders. Hence, it is a platform utilization trial and error. With different technology adoption, IA's KM can sustain, thus making technology has insignificant effect on IA's KM sustainability. In addition, Wibowo et al. (2018) explain that the external factor is the most influencer in technology adoption.

Supervisor play important role to manage workload, so employees get their training opportunity. Employees should express their training needs proactively, so supervisor can develop the proper training plan. Intrinsic motivation is significant contributor for training plan formulation (Mielniczuk and Laguna, 2017).

The employee realized that they could discover new knowledge during work activity. New projects and problem-solving jobs contribute to employee knowledge development. Through the new project, employees obtain new knowledge about new equipment or technology, e.g., radar technology adoption to scan and calculate stockpile volume. During the problem-solving job, employee discover knowledge about the existing equipment or process, e.g., mechanical equipment effect and fluid flow characteristics in a particular circuit. Experiencing "failure" can convey a lot of information (James et al. 2017).

Content analysis is done for the respondent's KM aspiration. The word "knowledge" is associated with another word because the main topic is KM. The words "sharing" and "training" are associated to the training and development clusters. Another word showed in Figure 3, which can be associated to training and development cluster are "opportunity", "rotation" (job rotation), "benchmarking", "socialization", "conference", "seminar", "development", "learning", "journal", "education", "certification", "work", "library", and "community".

IA's KM Sustainability Strategy

Training plans need to be developed and evaluated periodically. The training plan is expected to ensure the employee training opportunity. Training plans need to be evaluated based on the available training events. The training plan can be adjusted based on available training events to ensure routine training implementation. The training plan should be in line with the strategic objective to prevent repetitive and short-term (Rajasekar and Khan, 2013). Thus, a training and development plan may need to be developed with strategic tools, e.g., BSC (balanced scorecard) and SWOT (strength weakness opportunity threat).

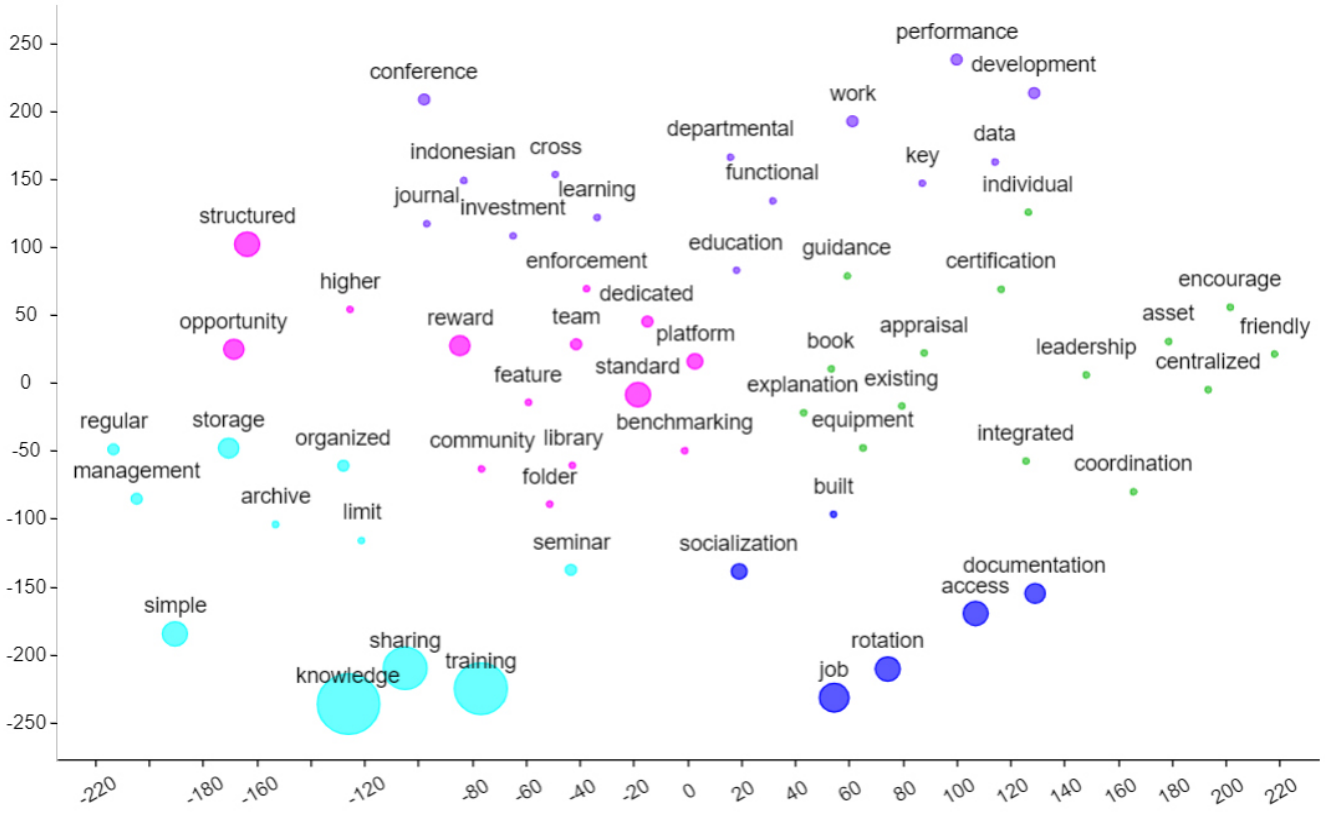

Figure 3. t-SNE graph respondent's KM aspiration

IA needs to establish, CoP like problem-solving forum. Problem-solving work usually be done by a small group of employees. The new knowledge discovered during the problem-solving work needs to be shared with a bigger group of employees and documented as a lesson learned or success story. Team-based framework able to capture tacit knowledge, leveraging system and tools, and promoting collaboration (Taylor, 2013).

Since IA has been running a simple KM system, it needs to be improved. A proper KM system, should enforce and ensure the routine training opportunity and knowledge sharing. Thus, a proper KM system will enforce and ensure KM sustainability. There should be personnel responsible for KM sustainability (Hana, 2012). For caution, knowledge managers can cause conflict and counterproductive if it is not negotiated with stakeholders (Perrin, 2012).

Managerial Implication

It is recommended to the organization to build a comprehensive training and development plan and evaluate the execution. The training and development plan list is built at the beginning of the year and can grow during the year. Then its compliance is checked periodically, e.g., monthly. Since financial planning is usually done by the end of the previous year, the organization may put a general budget for training and development, e.g., one training per person based on the last five years' actual training cost.

The organization may also appoint personnel responsible for the KM and form a KM team to ensure the KM is running properly. For the short and medium-term, superintendent or general superintendent can be appointed as a knowledge leader within each unit. The knowledge leader supposes to enforce or maintain the knowledge creation within each unit by training, sharing, job rotation, benchmarking, socialization, conference, seminar, higher education, and work that can develop knowledge. In the long term, it should be considered to have a knowledge manager position within the organization.

CONCLUSION AND RECOMMENDATIONS

Conclusions

This study finds the interesting facts that agrees and disagrees with the KM theories. This study agrees that training and development contribute significantly to KM sustainability. This study also disagrees with the theory of KM contribution from culture, reward, work system, and technology. Further, this finding implies that knowledge creation is the most important for IA's KM sustainability.

This research may duplicate to other PTFI department to enrich the result. Since not all departments implement KM, the precondition of KM implementation may be considered to conduct this research duplication.

This study is conducted in an organization that applied simple KM. Thus it makes the limitation of this study. The study applied to mature KM organizations may result a different outcomes. Since there is no mature KM implementation in PTFI, the study on mature KM organizations cannot be conducted within PTFI.

Recommendations

Further, this research needs to be followed up to find the suitable form of training and development suitable for IA. Training and development forms may vary by online or offline, either onsite or offsite. It is also recommended to conduct new research about knowledge externalization. Knowledge externalization can release organization dependencies on personnel tacit knowledge. The research may start from the externalization or documentation paradigm, whether it is complex "traditional" documentation or "modern" simple documentation like Apple's user guide. Then continue to proper documentation form that is suitable for IA.

REFERENCES

Ahmad B, Latif S, Bilal AR, Hai M. 2019. The mediating role of career resilience on the relationship between career competency and career success. *Asia-Pasific Journal of Business Administration* 11(3):209-231. doi:https://doi. org/10.1108/ APJBA-04-2019-0079

Al-Alma AY. 2014) Technology knowledge management (TKM) taxonomy: Using technology to manage knowledge in a Saudi municipality. *VINE* 44(1):2-21. doi:https://doi. org/10.1108/VINE-12-2012-0052

Armstrong M. 2014. *Armstrong's Handbook of Human Resource Management Practice.* Ed. ke-13. London: Kogan Page.

Bhatt D. 2000. EFQM: Excellence model and knowledge management implications. *Journal of Knowledge Management* 5(1):68-71.

Boadu F, Xie Y, Du Y-F, Dwomo-Fukuo E. 2018. MNEs subsidiary training and development and firm innovative performance: The moderating effects of tacit and explicit knowledge recieved from headquarters. *Sustainability* 10(11):4208. https://doi.org/10.3390/su10114208

Carcel-Carrasco J, Carcel-Carrasco J-A, Penalvo-Lopez E. 2020. Factors in the relationship between maintenance engineering and knowledge management. *Applied Sciences* 10(8):2810. https://doi.org/10.3390/app10082810

Dahou K, Hacini I, Burgoyne J. 2019. Knowledge management as a critical success factor in developing international companies' organizational learning capabilities. *Journal of Workplace Learning* 31(1):2-16. https://doi. org/10.1108/JWL-12-2017-0118

Durmusoglu S, Jacobs M, Nayir DZ, Khilji S, Wan X. 2014. The quasi-moderating role of organizational culture in the relationship between rewards and knowledge shared and gained. *Journal of Knowledge Management* 18(1):19-37. https:// doi.org/10.1108/JKM- 05-2013-0183

Febriantoro W, Surendro K. 2015. Business process oriented knowledge management system design (Case study development center of metrological human resources, ministry of trade republic of Indonesia). *The Asian Journal of Technology Management* 8(2):89-95. http://dx.doi. org/10.12695/ajtm.2015.8.2.2

Hair JF, Ringle CM, Sarstedt M. 2011. PLS-SEM: Indeed a silver bullet. *Journal of Marketing Theory and Practice* 19(2):139-151. http:// dx.doi.org/10.2753/MTP1069-6679190202

Hair JF, Risher JJ, Sarstedt M, Ringle CM. (2019). When to use and how to report the result of PLS-SEM. *European Business Review* 31(1):2-24. https://doi.org/10.1108/EBR-11-2018-0203

Hair JF, Sarstedt M, Ringle CM, Mena JA. 2012. An assessment of the use of partial least squares structural equation modeling in marketing research. *Journal of the Academy of Marketing Science* 40(3):414-433. http://dx.doi. org/10.1007/s11747-011-0261-6.

Hana U. 2012. The process of knowledge continuity ensuring. *Journal of Competitiveness* 4(2):38-48. http://dx.doi.org/10.7441/joc.2012.02.03

Häusler AN, Becker B, Bartling M, Weber B. 2015. Goal or gold: Overlapping reward processes in soccer players upon scoring and winning money. *PLoS ONE* 10(4):1-16. https://doi. org/10.1371/ journal.pone.0122798

Hetenyi G, Lengyel AD, Szilasi MD. 2019. Quantitative analysis of qualitative data: Using voyant tools to investigate the sales-marketing interface. *Journal of Industrial Engineering and Management* 12(3):393-404. http://dx.doi. org/10.3926/jiem.2929

Intezari A, Taskin N, Pauleen DJ. 2017. Looking beyond knowledge sharing: An integrative approach to knowledge management culture. *Journal of Knowledge Management* 21(2):492-515. https:// doi.org/10.1108/JKM-06-2016-0216

Jackson SE, Hitt MA, DeNisi AS. 2003. *Managing Knowledge for Sustained Competitive Advantage: Designing Strategies for Effective Human Resource Management.* Ed. ke-1. San Francisco: Jossey-Bass.

James AT, Gandhi O, Deshmukh S. 2017. Knowledge Management of Automobile System Failures through Development of Failure Knowledge Ontology from Maintenance Experience. *Journal of Andvances in Management Research* 14(4):425-445. https://doi.org/10.1108/JAMR-02-2017-0024

Jokanovic B, Zivlak N, Okanovic A, Culibrk J, Dudak L. 2020. The Model of knowledge management based on organizational climate. *Sustainability* 12(8):3273.http://dx.doi.org/10.3390/ su12083273

Kaldeen M, Thelojjagoda S, Samsudeen SN. 2021) The Role of employee engagement of knowledge management and worker productivity: A case study in Sri Lanka. *Journal of Asian Finance, Economics, and Business* 8(4):507-515. https:// doi.org/10.13106/jafeb.2021.vol8.no4.0507

Kianto A, Shujahat M, Hussain S, Nawaz F, Ali M. 2019. The impact of knowledge management on knowledge worker productivity. *Baltic Journal of Management* 14(2):178-197. http://dx.doi. org/10.1108/BJM-12-2017- 0404

Komara Y. 2014. Implementation of knowledge management at metallurgy department PT Freeport Indonesia to eliminate both knowledge loss and knowledge gap due to high employee turnover [tesis]. Bandung: Institut Teknologi Bandung.

Kordab M, Raudeliuniene J, Meidute-Kavaliuskiene I. 2020. Mediating role of knowledge management in the relationship between organizational learning and sustainable organizational performance. *Sustainability* 12(23):1-20. http:// dx.doi.org/10.3390/su122310061

Lin T-C, Chang CL-h, Tsai W-C. 2016. The influence of knowledge loss and knowledge retention mechanisms on the absorptive capasity and performace of a MIS Departement. *Management Decision* 54(7):1757-1787. http://dx.doi. org/10.1108/MD-02-2016-0117

Lwanga NE, Ngulube P. 2019. Nexus between reward culture and knowledge creation in selected academic libraries in Uganda. *South African Journal of Information Management* 21(1). doi:http://dx.doi.org/10.4102/sajim.v21i1.1022

Massingham PR. 2018. Measuring the impact of knowledge loss: a longitudinal study. *Journal of Knowledge Management.* 22(4):721-758. https:// doi.org/10.1108/JKM-08-2016-0338

McInerney CR, Koenig ME. 2011. Knowledge management processes in organization: theoretical foundations and practice. *Synthesis Lectures on Information Concepts Retrieval and Services* 3(1). http://dx.doi.org/10.2200/ S00323ED1V01Y201012ICR018

Mehale KD, Govender CM, Mabaso CM. 2021. Maximising training evaluation for employee performance improvement. *SA Journal of Human Resource Management* 19. https:// doi. org/10.4102/sajhrm.v19i0.1473

Mielniczuk E, Laguna M. 2017. Motivation and training initiation: Evidence from Poland. *Journal of Workplace Learning* 29(1):24-36. https://doi. org/10.1108/JWL-01-2016-0002

Mojibi T, Hosseinzadeh S, Khojasteh Y. 2015. Organizational culture and its relationship with knowledge management strategy: A case study. *Knowledge Management Research & Practice* 13(3):281-288. http://dx.doi.org/10.1057/ kmrp.2013.49

Naim MF, Lenka U. 2018. Development and retention of generation Y employees: a conceptual framework. *Empoyee Relations* 40(2):433-455. https://doi.org/10.1108/ER-09-2016-0172

Nonaka I, Takeuchi H. 1995. *The Knowledge Creating Company: How Japanese Companies Create the Dynamics of Innovation*. New York: Oxford University Press.

Perrin A. 2012. The practice of knowledge managers in lafarge. *Journal of Knowledge Management* 16(2):204-214. https://doi. org/10.1108/13673271211218825

Polyanska A, Malynka O. 2014. Knowledge management as a basis of modern development of the companies. *Journal of Eastern European and Central Asian Research* 1(2). http:// dx.doi. org/10.15549/jeecar.v1i2.19

Pozas OH, Jauregui KL. 2012. A snapshot of training practices in Peru. *Estudios Gerenciales* 28(124):67-85. http://dx.doi.org/10.1016/S0123-5923(12)702164

Rabhi M. 2011. Key performance indicator metric effect on the advancement and sustainability of knowledge management. *The Electronic Journal of Knowledge Management* 9(2):149-154.

Rajasekar J, Khan SA. 2013. Training and development function in Omani public sector organizations: A critical evaluation. *Journal of Applied Business and Economics* 14(2):37-52.

Rasula J, Vuksic VB, Stemberger MI. 2012. The impact of knowledge management on organisational performance. *Economic and Business Review for Central and South-Eastern Europe* 14(2):147-168.

Roobol CJ, Koster F. 2020. How organisations can affect employees' intention to manage enterprise-specific knowledge through informal mentoring vignette study. *Journal of Knowledge Management* 24(7):1605-1624. https://doi. org/10.1108/JKM-11-2018-0668

Sahibzada UF, Cai J, Latif KF, Sahibzada HF. 2019. Knowledge management processes, knowledge worker satisfaction, and organizational performance. *Aslib Journal of Information Management* 72(1):112-129. https://doi. org/10.1108/AJIM-10-2019-0276

Sarwono J. 2012. *Mengenal PLS-SEM.* Yogyakarta: CV. Andi Offset.

Schiuma G. 2012. Managing knowledge for business performance improvement. *Journal of Knowledge Management* 16(4):515-522. https:// doi. org/10.1108/13673271211246103

Shabrina V, Silvianita A. 2015. Factors analysis on knowledge sharing at Telkom Economic and

Business School (TEBS) Telkom University Bandung. *Procedia - Social and Behavioral Sciences* 169:198-206. https://doi. org/10.1016/j. sbspro.2015.01.303

Shafiee S, Eskandaripour M, Soltani S. 2020. The effective factors on knowledge management in universities from physical education instructors' viewpoints. *Physical Culture and Sport* 86(1):49-65. http://dx.doi.org/10.2478/pcssr-2020-0012

Sinclair S, Rockwell G. 2021. Voyant tools. https:// voyant- tools.org/

Sprinkle TA, Urick MJ. 2018. Three generational issues in organizational learning: Knowledge management, perspectives on training and "low-stakes" development. *The Learning Organization* 25(2):102-112. http://dx.doi. org/10.1108/TLO-02-2017-0021

Taylor G. 2013. Implementing and maintaining a knowledge sharing culture via knowledge management teams: A shared leadership approach. *Journal of Organizational Culture, Communications and Conflict* 17(1):69-91.

Tzortzaki AM. 2014. Knowledge-based strategies for managers in the service sector. *Management Research Review* 37(10):858-879. https:// doi. org/10.1108/MRR-03-2013-0080

Virtanen I. 2011. Externalization of tacit knowledge implies: A simplified theory of cognition. *Journal of Knowledge Management Practice* 12(3).

Wibowo YH, Wijayanto H, Daryanto HK. 2018. Faktor yang memengaruhi minat penggunaan perpustakaan digital (Studi kasus pada IPB dan Ubinus). *JABM* 4(3):431. https://doi. org/10.17358/jabm.4.3.431

Youssef M, Haak-Saheem W, Youssef EM. 2017. A stuctural equation model for knowledge sharing behaviour in an emerging economy. *Journal of Knowledge Management* 925-945.