# Knowledge Creation Among Managers and Supervisors in Palm oil Estates in Malaysia

**Zabeda Abdul Hamid, Shangkar Ganesh Chandiram and Rodrigue Ancelot Harvey Fontaine**
International Islamic University Malaysia, Kuala Lumpur, Malaysia

zabeda@iium.edu.my
shangkarg@gmail.com
ridhwan_fontaine@iium.edu.my

**Abstract:** Knowledge of planting and seeding is critical to ensure the healthy growth of palm oil trees, maintaining efficient harvesting systems, and achieving quality products. However, there is a lack of studies in the palm oil industry on how knowledge is created within the managerial and supervisory staff of palm oil plantations that can enhance the workflow and output. This research conceptualises four knowledge creation tools; Socialisation, Externalisation, Combination, and Internalisation (SECI) based on Nonaka's Knowledge Spiral Theory. It is hoped the research can discover the knowledge creation tools most utilised among the Managers and Supervisory teams in palm oil estates in Malaysia who were the samples of this research. The findings of this research revealed that Socialisation and Combination significantly contributed to knowledge creation. However, Internalisation and Externalisation were not positively related to knowledge creation. When the data was analysed with moderating variables such as job category, upper management preferred using Socialisation tools while senior assistant or assistant managerial levels preferred Socialisation, Combination, and Internalisation. Furthermore, field supervisors or field conductor levels preferred utilising all four tools. As a result, Socialisation was identified as one of the major tools where there was a relationship with the three levels of job category. Therefore, plantation companies can develop relevant training programmes based on tacit-to-tacit conversion activities. The research data can be applied by plantation companies in Malaysia to implement appropriate training programmes for Managers, Assistant Managers, and Field Supervisors.

**Keywords:** Socialisation, Externalisation, Combination, Internalisation, Knowledge creation, SECI model

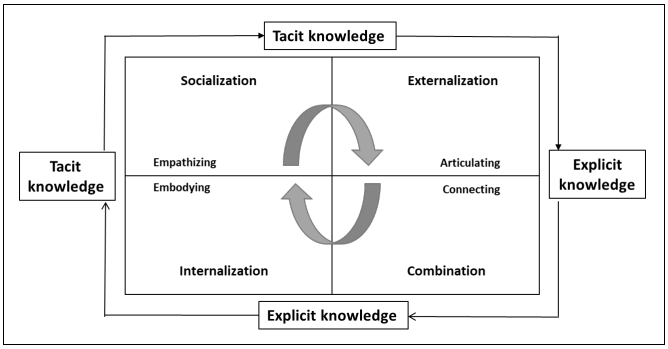
## 1. Introduction

Effective Knowledge Management (KM) needs a suitable combination of organisational and managerial initiatives and suitable information technologies. Malaysian palm oil plantations have been recognised as leaders in technology development and adoption. KM in the plantations started with the use of computerised inventory management systems. Subsequently, plantation companies applied KM to integrate various functions, including sourcing raw materials, production, and support activities (Kamarulzaman and Mohayidin, 2016). However, there is a gap in the Knowledge Creation process at palm oil plantations that need to be addressed. Therefore, this research focused on knowledge creation among Managers and Supervisors in palm oil estates in Malaysia as they are involved in managing the business.

### 1.1 Overview of Knowledge ManagemenT

Organisations are dynamic instead of static constructs (Nagpal, 2019) that change as people join and leave them over time. Furthermore, organisations also undergo diversification, merge with other organisations, and experience various changes. The dynamic nature of an organisation ensures that the knowledge accumulated or lost within an organisation is also dynamic (Botha et al., 2014). Hence, the people involved in KM must manage the knowledge created as staff continuously learn new knowledge. Additionally, they must identify new approaches to doing things and handle the loss of knowledge that gradually develops intellectual liabilities (Botha et al., 2014). As a field of study, KM has existed for more than 30 years and has moved to an essential component of organisational life from an academic theory (Girard and Girard, 2015).

The knowledge creation model was initiated by Nonaka in 1991. It is critical before a successful and effective knowledge transfer occurs. The model was then subsequently expanded in 1995 by Nonaka and Takeuchi (Li et al., 2018). The framework of the Socialisation, Externalisation, Combination, and Internalisation (SECI) knowledge creation model is shown in Figure 1. The model describes how tacit and explicit knowledge is created, transferred, and re-generated in an organisation.




(Source: Nonaka & Takeuchi, 1995; Nonaka & Teece, 2001)

**Figure 1: The Framework of SECI Knowledge Creation**

Tacit knowledge is also referred to as implicit knowledge and is defined as knowledge that is impossible to be conveyed in a written or spoken method. This form of knowledge explains an individual's skill, idea, or experience and is difficult to express in written form (Hadjimichael & Tsoukas, 2019). Conversely, explicit knowledge is a form of knowledge ready to be articulated, codified, documented, and accessible whenever needed. Therefore, explicit knowledge can be conveyed to one another in an organisation and can be stored in hard or soft copy forms (Hislop et al., 2018).

According to the SECI framework, knowledge is created through conversion and sharing. Four methods allow the processes of conversion and sharing. First, Socialisation is described as tacit knowledge sharing via observing, imitating, practicing, and participating among the members. The second knowledge-creation process is Externalisation, where tacit knowledge is articulated into explicit knowledge and is deeply internalised to knowledge-sharing creation. Third, Combination depicts the integration of concepts into the system of knowledge. Lastly, Internalisation, denotes expressing explicit knowledge into tacit knowledge (Bandera et al., 2017).

Ahmed and Mohamed (2017) stated that proper KM improves the performance of organisations whether it is public or private. They also emphasised that the retention and proper training of employees not only improve their skills but also build confidence. This paper, therefore, examined the importance of KM in modern organisations especially in the agricultural sector. Agriculture is an important sector in Malaysia for national growth and has been the backbone of the Malaysian economy. Palm oil is one of the largest agricultural products produced for the domestic and export market. As a palm oil producer, Malaysia is experiencing a robust development in new palm oil plantations and mills as this commodity plays a significant role in the economic growth of the country.

The palm oil industry including estates and millings, utilise considerable human resources and machinery. Thus, the industry aims to enhance KM and knowledgeable people for sustainability (Kamarulzaman & Mohayidin, 2016). Knowledge creation processes are very important for an organisation's success; hence, this research focuses on understanding SECI tools and how it helps in sharing and creating knowledge among Managers and Supervisory teams in palm oil estates in Malaysia. The findings could help companies in similar circumstances to improve their business processes and organise their knowledge flow between employees as management and supervisory teams are responsible for managing palm oil estates from planting seedlings until the harvest.

### 1.2 Malaysian Palm oil Industry

Agriculture has always been an important sector of the Malaysian economy as Malaysia is one of the largest producers and exporters of palm oil in the world. Planting palm oil for commercial purposes started in 1917 and grew rapidly in the early 1960s due to the government's agricultural diversification programme that was introduced to decrease the nation's economic dependence on tin and rubber (Samad et al., 2014) as well as land settlement schemes to plant palm oil to eradicate poverty among farmers and smallholders without lands. The industry's development has been centralised to increase prosperity and societal advancement nationwide, starting from the rural communities employed in plantations to the downstream industries and extending to cities and export zones (Kushairi & Ong-Abdullah, 2019).

As such, the Managerial and Supervisory team's knowledge of agricultural practices and land usage can reduce the ecological impact on the agroecosystem and mill supply (Bessou et al., 2017). They need to equip themselves with sufficient knowledge in these areas to produce Fresh Fruit Bunches (FFB) efficiently as poor process

management in palm oil estates impacts production. Lack of knowledge in the selection of plantation sites (i.e. soil depth, drainage, soil composition, and moisture availability) creates poor quality in the size and health of the trees (Hamdani & Musofa, 2015).

However, the performance of Malaysia's palm oil estates began to decline from 2019 onwards with a 11.06% drop in palm oil production after a steady increase until 2018. The last decline in production was recorded in 2014, but the percentage was much lower at 1.4%. Lower production, decreased prices, and weak demand reduced the country's palm oil export earnings from RM74.75 billion to RM65.12 billion (Shevade & Loboda, 2019).

In addition, palm oil production declined due to external factors such as unpredictable rainy seasons and internal factors such as process management of the plantations' operation (Seng & Ahmad, 2017). The impact from the internal factor is manageable with appropriate KM in the process, while the external factor is beyond the Managerial and Supervisory team's control (Kushairi & Ong-Abdullah, 2019).

### 1.3 Problem Statement

The Managerial and Supervisory team's knowledge in seeding and planting palm oil trees in the field can determine the yield's quality in future harvesting. Failure to use improvised planting materials reduces the profitability of palm oil production as absence of this knowledge causes the purchase of planting materials from the wrong channels. Adequate knowledge gives the Managerial and Supervisory teams access to the information and resources they need to do their jobs effectively. It also helps the business retain that knowledge for future use, which promotes efficiency, a better working experience, and less repetitive work.

Sufficient knowledge of palm oil plantation will enhance the Managerial and Supervisory team's skills in reasoning and problem-solving especially in planting patterns, planting palm seedlings, and planting density. The teams will become more efficient in applying knowledge and solving problems across different levels of the organisation. Unfortunately, currently, there is a gap in the knowledge of the Managerial and Supervisory teams in managing palm oil estates. Considering the situation, the research explored the knowledge-creation process using the SECI tools among Managerial and Supervisory teams to fill the research gap in KM practices, especially in palm oil estates in Malaysia.

### 1.4 Purpose of the Research

This research aims to investigate and identify the four knowledge-creation tools from the SECI Model: Socialisation, Combination, Externalisation, and Internalisation. Specifically, it seeks to determine the preferred tool (or tools) contributing to knowledge creation among the Managerial and Supervisory teams in Malaysian palm oil estates and to recommend appropriate training and development programmes accordingly.

### 1.5 Significance of the Research

From an academic point of view, this research benefits from the experiences of the Managerial and Supervisory team in managing knowledge in the workplace as the findings will encourage more individuals in the organisation to identify best practices in knowledge creation using SECI tools. In addition, the results could assist the human resource department in designing appropriate training programmes and equipping necessary mechanisms that can enhance knowledge sharing and creation among the managerial and supervisory teams using the SECI model.

## 2. Knowledge Management

As a critical process, KM is involved in every department regardless of its function in the organisation. However, the process of KM may differ to suit the department's function and be executed in diverse ways to improve organisational performance. Omotayo (2015) stated that KM addresses the crucial issues of organisational adoption, survival, and competence when facing progressively irregular environmental change. According to Nasimi et al. (2013), KM helps an organisation function by comprehending the data's relationship, determining and documenting rules to manage data, ensuring data accuracy, and maintaining data integrity. Furthermore, Yusof, Masrek and Noordin (2016) proved that KM application in an organisation is about mapping knowledge and information resources online and offline.

Studies have shown the various ways KM function helps organisations achieve and sustain performance. Widiatuti, Arachman, and Broto (2019) showed that KM is a measure to make the *know-how* residing in human brains gained through learning and performance initiatives accessible and beneficial to each person in the

organisation. The measure attempts to encapsulate or tap the organisation's collective experiences and wisdom and make it accessible to ensure everyone can utilise it to enhance performance.

### 2.1 The Development of Knowledge Management in Malaysia

Hegazy and Ghorab (2014) summarised that the fourth Malaysian Prime Minister, Tun Dr Mahathir Mohammad stimulated the KM agenda in 1991 to transform Malaysia's economy into a knowledge-based economy. Some organisations' initiatives in KM application emerged as an inspiration to many others to act similarly. Apriliadi (2019) stated that KM progressed in Malaysia when multinational firms such as Microsoft and Hewlett-Packard (HP), introduced their existing KM practices, processes, and applications.

According to Raudeliūnienė and Davidavičienė (2018), the Multimedia Development Corporation (MDC) was one of the first government-linked companies (GLCs) that practiced KM in the early 1990s. Malaysia started laying the way and placed the foundation for a knowledge-based economy (k-economy) in the early 1990s by assuming that continuous measures were required to enhance the country and the industries' competitive position. Contrastingly, a survey undertaken by Asrar-ul-Haq and Anwar (2016) discovered that Malaysia lagged behind leading nations such as Singapore and the USA concerning knowledge enablers. Malaysia was found to be nearly on par with developed countries only in technological cooperation. Several other efforts to assess KM directed researchers to report that KM was comparatively slow in Malaysia (Hashim, Talib, & Alamen, 2014). Previous studies discovered that the implementation level was not on par with the awareness level, although many organisations were aware of KM and the imminent advantages (Razi, Habibullah, & Hussin, 2019).

### 2.2 Research Hypotheses

This research was conducted among the Managerial and Supervisory teams in Malaysian palm oil estates to examine the relationships between:

- Independent variables (Socialisation, Externalisation, Combination, and Internalisation) and other moderator variables (Job Category and Years of Working Experiences).
- The dependent variable (Knowledge Creation) and moderator variables).
- The moderating effect on the relationship between the independent variables and dependent variables.

Relevant hypotheses were developed to test the relationships between the variables:

*H1: Socialisation is positively related to individual knowledge creation.*

*H2: Externalisation is positively related to individual knowledge creation.*

*H3: Combination is positively related to individual knowledge creation.*

*H4: Internalisation is positively related to individual knowledge creation.*

*H5: The relationship between Socialisation, Externalisation, Combination and Internalisation, and knowledge creation is moderated by job category.*

*H6: The relationship between Socialisation, Externalisation, Combination and Internalisation, and knowledge creation is moderated by years of working experience.*

## 3. Methodology

This research utilised a quantitative method and adopted existing questionnaires by Nasser (2012) and Huang and Wang (2002) to measure individual knowledge creation. The unit of analysis in this research was individuals and the samples for this research were selected from the Managerial and Supervisory teams in palm oil estates in Malaysia. In this study, the researcher used convenient sampling to obtain the sample. Etikan, Musa, and Alkassim (2016) defined convenience sampling as a type of nonprobability or non-random sampling where members of the target population that meet certain practical criteria, such as easy accessibility, geographical proximity, availability at a given time, or the willingness to participate are included for the purpose of the study. Managerial and Supervisory teams of various palm oil estates in Malaysia were contacted through personal networks and work groups and a link to the questionnaire was shared for data collection. A total of 325 useable responses were received and the data collected was analysed using SPSS version 27.

### 3.1 Research Framework

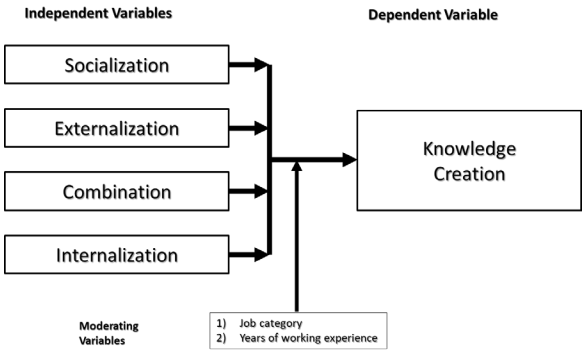



**Figure 2: Research Framework**

The SECI model by Nonaka and Takeuchi (1995) was reviewed as the research framework and foundation for this research. This model relates to the type of knowledge and its interaction with knowledge creation (Dalkir, 2017). Figure 2 exhibits the four knowledge-creation tools that are sequential. Therefore, knowledge evolves in a sequential pattern with differences. New quality of knowledge is created when the knowledge is converted from one tool to another. This study used these tools to develop the research hypotheses to examine the knowledge creation among the Managerial and Supervisory Teams in Malaysia (Syed et al., 2018).

## 4. Results and Conclusion

### 4.1 Linear Regression

Table 1 summarises the overall relationships among the variable. It was discovered that Socialisation and Combination had a positive relationship with Knowledge Creation if it is measured by simple linear regression with a group of Managerial and Supervisory teams with different levels of years of working experience.

**Table 1: Summary of Linear Regression**

| Num | DV / IV | Knowledge Creation | F | $R^2$ | p |
|---|---|---|---|---|---|
| 1 | Socialization | H1 Accepted | 44.299 | 0.118 | 0.000 |
| 2 | Externalization | H2 Rejected | 3.078 | 0.006 | 0.080 |
| 3 | Combination | H3 Accepted | 48.177 | 0.127 | 0.000 |
| 4 | Internalization | H4 Rejected | 0.009 | 0.000 | 0.926 |

Therefore, it is concluded that Internalisation and Externalisation are not appropriate tools for generating Knowledge Creation for the group of Managerial and Supervisory teams with different years of working experience. Internalisation and Externalisation are related to learning from reading materials and Zulkifli et al. (2021) proved that issues of reading habits are still far behind due to a few factors such as lack of interest, motivation, previous knowledge, and vocabulary knowledge which could affect reading comprehension. Thus, H1 and H3 were accepted and H2 and H4 were rejected.

### 4.2 Linear Regression with Job Category

Table 2 shows the relationship between independent and dependent variables which are moderated by job category.

**Table 2: Linear Regression with Job Category**

| No. | IV / Job Category | Socialization | Externalization | Combination | Internalization |
|---|---|---|---|---|---|
| 1 | Managerial or Above | Positive Relationship<br>F = 7.040,<br>$R^2$ = 0.079,<br>p = 0.010 | No Relationship<br>F = 0.544,<br>$R^2$ = 0.008,<br>p = 0.463 | No Relationship<br>F = 1.675,<br>$R^2$ = 0.010,<br>p = 0.200 | No Relationship<br>F = 0.653<br>$R^2$ = 0.009,<br>p = 0..422 |
| 2 | Sr. Asst/Asst. Mgr | Positive Relationship<br>F = 83.510,<br>$R^2$ = 0.438,<br>p = 0.000 | No Relationship<br>F = 0.002,<br>$R^2$ = 0.000,<br>p = 0.963 | Positive Relationship<br>F = 128.618,<br>$R^2$ = 0.546,<br>p = 0.000 | Negative Relationship<br>F = 12.864,<br>$R^2$ = 0101,<br>p = 0.001 |
| 3 | Field Supervisor/ Conductor | Negative Relationship<br>F = 48.453,<br>$R^2$ = 0.245,<br>p = 0.000 | Negative Relationship<br>F = 50.778,<br>$R^2$ = 0.254,<br>p = 0.000 | Positive Relationship<br>F = 8.648,<br>$R^2$ = 0.050,<br>p = 0.004 | Negative Relationship<br>F = 55.955,<br>$R^2$ = 0.273,<br>p = 0.000 |

From Table 2, it can be concluded that:

- For upper managerial levels, they preferred to create or exchange their knowledge through Socialisation but not with Externalisation, Combination, and Internalisation.
- For the Senior Assistant/Assistant Manager level, they preferred to create or exchange their knowledge through Socialisation, Combination, and Internalisation but not with Externalisation.
- For the Field Supervisor/Conductor level, they preferred to create or exchange their knowledge through these four tools: Socialisation, Externalisation, Combination, and Internalisation.
- Socialisation was identified as the most major tool where there is a relationship with all three levels of job category.

Based on the analysis 8 or 67% out of 12 tests showed $p \leq 0.05$, and Hypothesis 5 for this moderator was accepted. The job category moderates the relationship between Socialisation, Externalisation, Combination, and Internalisation and Knowledge Creation

### 4.3 Linear Regression with Years ff Working Experience

Table 3 shows the relationship between independent and dependent variables which are moderated by years of working experience.

**Table 3: Summary of Linear Regression with Years of Working Experience as a Moderator**

| No. | IV / Experience | Socialization | Externalization | Combination | Internalization |
|---|---|---|---|---|---|
| 1 | < 5 | No Relationship<br>F = 2.511,<br>$R^2$ = 0.044,<br>p = 0.123 | No Relationship<br>F = 3.965,<br>$R^2$ = 0.082,<br>p = 0.055 | Positive Relationship<br>F = 7.047,<br>$R^2$ = 0.155,<br>p = 0.012 | No Relationship<br>F = 1.922,<br>$R^2$ = 0.027,<br>p = 0.175 |
| 2 | 6 – 10 | No Relationship<br>F = 0.260,<br>$R^2$ = 0.012,<br>p = 0.615 | No Relationship<br>F = 0.173,<br>$R^2$ = 0.008,<br>p = 0.682 | No Relationship<br>F = 0.176,<br>$R^2$ = 0.008,<br>p = 0.679 | No Relationship<br>F = 0.001,<br>$R^2$ = 0.000,<br>p = 0.975 |
| 3 | 11 – 15 | No Relationship<br>F = 0.087,<br>$R^2$ = 0.001,<br>p = 0.768 | No Relationship<br>F = 0.000<br>$R^2$ = 0.000,<br>p = 0.992 | Positive Relationship<br>F = 6.792,<br>$R^2$ = 0.083,<br>p = 0.011 | No Relationship<br>F = 0.429,<br>$R^2$ = 0.007,<br>p = 0.515 |
| 4 | 16 – 20 | No Relationship<br>F = 1.476,<br>$R^2$ = 0.009,<br>p = 0.230 | No Relationship<br>F = 3.275,<br>$R^2$ = 0.043,<br>p = 0.076 | No Relationship<br>F = 0.053,<br>$R^2$ = 0.001,<br>p = 0.819 | Positive Relationship<br>F = 5.216,<br>$R^2$ = 0.076,<br>p = 0.027 |
| 5 | 21 – 25 | No Relationship<br>F = 2.604,<br>$R^2$ = 0.032,<br>p = 0.113 | No Relationship<br>F = 0.578,<br>$R^2$ = 0.012,<br>p = 0.451 | No Relationship<br>F = 0.129,<br>$R^2$ = 0.003,<br>p = 0.721 | No Relationship<br>F = 0.176,<br>$R^2$ = 0.008,<br>p = 0.051 |
| 6 | > 25 | Negative Relationship<br>F = 8.540,<br>$R^2$ = 0.071,<br>p = 0.004 | Negative Relationship<br>F = 17.367,<br>$R^2$ = 0.142,<br>p = 0.000 | No Relationship<br>F = 0.048,<br>$R^2$ = 0.000,<br>p = 0.827 | Positive Relationship<br>F = 5.849,<br>$R^2$ = 0.047,<br>p = 0.017 |

From Table 3, it can be summarised that:

- For the category > 25 years of working experience, there are significant positive relationships with Internalisation but a negative relationship with Socialisation and Externalisation.
- For the category 16 – 20 years of working experience, there is a significant positive relationship with Internalisation.
- For the category < 5 years of working experience, there is a significant positive relationship with Combination.
- For the category 11 – 15 years of working experience, there is a significant positive relationship with Combination.
- There is no relationship between the categories 6 – 10 and 21 – 25 years of experience.
- Based on the analysis of years of working experience, 6 or 25% out of 24 tests showed $p \leq 0.05$, and Hypothesis 6 for this moderator was rejected. The years of working experience category does not moderate the relationship between Socialisation, Externalisation, Combination, Internalisation and Knowledge Creation. Therefore, years of working experience were omitted from further discussion.

### 4.4 Recommendations

The overall amount of Knowledge Creation outcomes posed by the Managerial and Supervisory team in palm oil estates in Malaysia may influence the outcomes and result in FFB production. Each level in the job category preferred a different level of Knowledge Creation tools. Upper managerial levels preferred Socialisation while Senior Assistant/Assistant Manager levels preferred Socialisation, Combination, and Internalisation to generate or share their knowledge before being upgraded to the Managerial level. While the lower rank of Field Supervisor/Conductor category chose all four tools: Socialisation, Externalisation, Combination, and Internalisation for their knowledge creation. Based on the research findings, it is recommended to any plantation company organise training programmes based on the SECI Model. Since Socialisation fits all types of job categories, the plantation company can develop its training programmes based on tacit-to-tacit conversion programmes such as presentations, talks, mentoring programmes, informal and formal gatherings, and case studies. Workplace collaboration with the right software, digital platforms, social media, and messengers could also help develop and capture tacit knowledge.

### 4.5 Implications of this Research

Two implications can be drawn from this research:

- The Knowledge Creation tools contributed to Knowledge Creation among Managerial and Supervisory teams in palm oil estates in Malaysia; and
- The mediating factors influenced the Managerial and Supervisory teams in palm oil estates in Malaysia in creating their knowledge.

The findings of the research identified that Knowledge Creation tools such as Socialisation, Externalisation, Combination, and Internalisation significantly contributed to generating knowledge among Managers, Senior Assistants/Assistant Managers, and Field Supervisors/Conductors. This is because these tools have the following attractive attributes; it is relatively simple to apply, take little time away from day-to-day organisational activities, generate results for the organisation, combine Knowledge Creation and Knowledge Sharing, enable a caring and sharing culture in the organisation, continuously builds relationships and dynamic communities of practice, is a possible tool for multi-project management, and reforms knowledge society (Carvalho & Ferreira, 2001). Most organisations spend vast sums of money for training and development. Some organisations have achieved their targeted goals by creating, generating, and sharing knowledge among their subordinates while others fail due to uncertainty on the proper way to create knowledge among their subordinates. The findings of this research can provide guidance for any plantation's HR Department by determining which tools can be applied to generate knowledge among Managerial and Supervisory teams.

This research implies that Socialisation is a favourable tool and positively affects Knowledge Creation among Managers, Assistant Managers, and Field Supervisors of palm oil estates in Malaysia. This is supported by Zabeda (2008) who discovered that organisations benefit further in terms of knowledge sharing and creation through personal networking, basic communication practices, and discussions between managers and employees, rather than on technology. In addition, a study by Raid et al. (2012) examined the impact of the knowledge-creation process including Socialisation, Externalisation, Combination, and Internalisation on implementing a learning organisation (LO) strategy in an Algerian international oil company. Raid et al (2012)'s research revealed that Socialisation, Internalisation, and Combination have a significant impact on the success of a LO strategy. Socialisation is the major influential factor, having the strongest impact on LO but Externalisation was found to have no statistical influence on LO. These findings also showed that there is no relationship between Externalisation at the Managerial and Senior Assistant/Assistant Manager levels.

### 4.6 Limitations of the Research

Due to limited internet coverage in the estate, not all Managerial or Supervisory teams could access the questionnaire. One of the major disadvantages of an online questionnaire system surfaces in remote locations where access to electricity, stable internet connection, and other basic system requirements are difficult to meet. Such barriers impede the respondents from responding to the online questionnaire.

### 4.7 Suggestions for Future Research

Achieving a knowledgeable society is not an easy task. Clear understanding and proper tools should be applied to create or generate knowledge among the Managerial and Supervisory teams in palm oil estates because different employees have different types of skills, attitudes, and behaviours. The findings from this research may assist human resource departments in palm oil plantation companies to design training programmes according

to specific job categories. This research is deemed one of the pioneer studies of KM in palm oil estates in Malaysia.

The current research only focused on how the Knowledge Creation tools affect the Knowledge Creation process and how they were moderated by job category and years of working experience. However, organisational culture aspects were not tested in this research.

Further studies need to strengthen the theory's adaption to the current scenarios and culture. Future research can also examine whether organisational culture such as innovation, technology, transparency, values and beliefs, and other moderating variables such as education, race, and age have an impact on the Knowledge Creation process and Knowledge Creation tools.

### 4.8 Conclusion

Most industrial countries have gradually changed from industrialised economies to information or knowledge-based economies, where human beings become the most valued asset due to the tacit knowledge embedded which is difficult to access. Therefore, we have a KM system that was developed to discover, capture, apply, and share knowledge. Unfortunately, KM is rather new in palm oil estates in Malaysia.

Based on the findings of this study, it can be concluded that KM is an effective way for Malaysian plantation companies to build competencies in the market not only to compete with our neighbouring countries but also to gain a reputation in the eyes of the world. More importantly, the training programmes based on the SECI Model could be used as a guideline for any palm oil plantation company to develop their training programmes for their subordinates.

## References

Apriliadi, A. (2019) "The Impact of Knowledge Management on SME's Performance in the City of Bandung", *International Journal of Recent Technology and Engineering,* Vol 8, No. 3, pp 550-558.

Asrar-ul-Haq, M., and Anwar, S. (2016) "A Systematic Review of Knowledge Management and Knowledge Sharing: Trends, Issues, and Challenges", *Cogent Business & Management*, Vol 3, No. 1, pp 1-17.

Bandera, C., and Passerini, K. (2017) "Knowledge Management and the Entrepreneur: Insights from Ikujiro Nonaka's Dynamic Knowledge Creation model (SECI)", *International Journal of Innovation Studies,* Vol 1, No. 3, pp 163-174.

Bessou, C., Verwilghen, A., Beaudouin-Ollivier, L., Marichal, R., Ollivier, J., Baron, V., Bonneau, X., Carron, M. P., Snoek, D., Naim, M., and Aryawan, A.A.K. (2017) "Agroecological Practices in Oil Palm Plantations: Examples from the field", *OCL Oilseeds and Fats Crops and Lipids*, Vol 24, No. 3, pp 1-16.

Botha, A., Kourie, D., and Snyman, R. (2014) *Coping With Continuous Change in the Business Environment: Knowledge Management and Knowledge Management Technology*, Elsevier, London.

Dalkir, K. (2017) *Knowledge Management in Theory and Practice,* Springer, New York.

Etikan, I., Musa, S.A., and Alkassim, R.S. (2016) "Comparison of Convenience Sampling and Purposive Sampling", *American Journal of Theoretical and Applied Statistics*, Vol 5, No. 1, pp 1-4.

Girard, J. and Girard, J. (2015) "Defining Knowledge Management: Towards an Applied Compendium", Online Journal of Applied Knowledge Management, Vol 3, No. 1, pp 1-20.

Hadjimichael, D., and Tsoukas, H. (2019) "Toward a Better Understanding of Tacit Knowledge in Organizations: Taking Stock and Moving Forward", *Academy of Management Annals*, Vol 13, No. 2, pp 672-703.

Hamdani, H. and Mustofa, K. (2015) "A Review: Clearing Oil Palm Plantation with Multi-Stakeholder Model", *International Journal of Computer Applications*, Vol 115, No. 2, pp 1-10.

Hashim, E., Talib, N.A., and Alamen, K.M. (2014) "Knowledge Management Practice in Malaysian Construction Companies", *Middle East Journal of Scientific Research,* Vol 11, No. 21, pp 1952-1957.

Hegazy, D.F., and Ghorab, D.K. (2014) "The Influence of Knowledge Management on Organizational Business Processes' and Employees' Benefits", *International Journal of Business and Social Science,* Vol 5, No. 1, pp 148-172.

Huang, J.C., and Wang, S.F. (2002), "Knowledge Conversion Abilities And Knowledge creation and Innovation : A New Perspective on Team Competition".

Kamarulzaman, N.H. and Mohayidin M.G. (2016) "Application of Knowledge Management Systems in Malaysian Oil Palm Plantations' Supply Chain", *International Journal of Business and Systems Research*, Vol 5, No. 1, pp 104-121.

Kushairi, A., and Tiku-Abdullah, M. (2019) "Oil Palm Economic Performance in Malaysia and R&D Progress in 2018", *Journal of Oil Palm Research,* Vol 31, No. 2, pp 165-194.

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.

Nagpal, G. (2019) *The Future Ready Organization: How Dynamic Capability Management is Reshaping the Modern Workplace,* Harper Collins, New York.

Nasimi, M.H., Nasimi, S., Kasmaei, M.S., Kasmaei, H.S., Basirian, F., and Musapour, H. (2013) "Knowledge Management and Competitive Advantage for Organizations", *Kuwait Chapter of Arabian Journal of Business and Management Review,* Vol 2, No. 5, pp 56-65.

Nasser, F. (2012) "Knowledge Management And The Seci Model: A Study Of Innovation In The Egyptian Banking Sector", *Stirling Management School,* University of Stirling.

Nonaka, I., and Takeuchi, H. (1995) *The Knowledge – Creating Company.* Oxford Press, Oxford.

Raid, M.A., Khadra, D.H., and Ishaq, H. (2012) "The Impact of Knowledge Conversion Processes on Implementing a Learning Organization Strategy", *The Learning Organization,* Vol 19, No. 6, pp 482-496.

Raudeliūnienė, J., and Davidavičienė, V. (2018) "Knowledge Management Process Model", *Entrepreneurship and Sustainability Issues, Entrepreneurship and Sustainability Center,* Vol 5, No. 3, pp 542-554.

Razi, M.J., Habibullah, M., and Hussin, H. (2019) "Knowledge Management Behaviour Among Academicians: The Case of a Malaysian Higher Learning Institution", *Journal of ICT,* Vol 18, No. 2, pp 183-206.

Samad, R.S., Sukor, M.I., Syah, D., and Muslihah, E. (2014) "Understanding the Implementation of Knowledge Management in High-Performance Schools in Malaysia", *SAGE Open*, Vol 4, No. 4, pp 1-7.

Seng, K.W.K., and Ahmad, M.Y. (2017) "Factors Influencing Malaysian Palm Oil Export Demand in Long-Run and Short Run", *International Journal of Business and Management*, Vol 1, No. 2, pp 204-210.

Shevade, V. S., and Loboda, T. V. (2019) "Oil Palm Plantations in Peninsular Malaysia: Determinants and Constraints on Expansion", *PLoS One*, Vol 14, No. 2, https://doi.org/10.1371/journal.pone.0210628

Syed, J., Murray, P.A., Hislop, D., and Mouzughi, Y. (2018) *The Palgrave Handbook of Knowledge Management*, Springer, New York.

Widiatuti, M. A., Arachman, S. A., and Broto, A. (2019) "Analisis Knowledge Management Maturity Level Dengan Metode Siemens Maturity Level (Studi Kasus : Stimik Esq)", *Syntax*, Vol. 1, No 7, November.

Yusof, N. I., Masrek, M. N., and Noordin, S. A. (2016) "An Investigation on Task Characteristics and Knowledge Creation Process in the Context of Malaysian Administrative and Diplomatic officers", *Sains Humanika*, Vol 8, No. 1, pp 33-40.

Zabeda, A.H., (2008) "Identifying Knowledge and Creating Knowledgeable Employees", *Journal of Knowledge Management Practice*, Vol 9, No. 2, www.tlainc.com/articl154.htm.

Zulkifli, M.F., Ghani, M.F.A., Radzi, N.M., and Ghani, M.A. (2021) "Issues of Reading Habits Among Malaysian Students: School and Home Perceptions", *Journal of Islamic Education Research,* Vol 2, No. 2, pp 115-132. DOI: 10.35719/jier.v2i2.154.