KNOWLEDGE MANAGEMENT FACTORS IN INCREASING COOPERATIVE EFFECTIVENESS

[1]Nor Aslamiah Ali*, [2]Najmah Nawawi, [3]Nor Azlina Kassim, [4]Faiz Ahmad Yatim, [5]Norul Hayatie Hashim, [6]Rosmalina Che Yakzam, [7]Safawi Abdul Rahman

[1,2,3,4,5,6]*Institut Koperasi Malaysia*
[7]*Universiti Teknologi MARA*

*Corresponding author email: noraslamiah@ikma.edu.my
Received 11 April 2023; Revised 8 August 2023; Accepted 19 December 2023

ABSTRACT

Knowledge management (KM) is a process of managing explicit knowledge assets, potentially explicit and tacit, owned by an organisation. The knowledge owned by the cooperative's staff enables it to be governed well to achieve its aims. There are many factors shown in the previous studies that affect the effectiveness of an organisation. Nonetheless, the lack of studies related to KM in cooperatives has caused the implementation level and practice model of KM and its relationship with cooperative effectiveness to be unknown. This research views the cultural, governance structural and technological factors and develops the Knowledge Management Practice of the Medium Cluster Cooperative Model. This research employed purposive sampling in which cooperative samples were divided into fragments based on the functions of each state with the highest earnings, and only medium cluster cooperatives were selected as respondents. The SmartPLS v.3.2.9 analysis proves that knowledge management practice among medium cluster cooperatives in Malaysia is still high, particularly in the structural, cultural, and technological aspects of governance that impact organisational effectiveness, highlighting the positive findings of the research.

Keywords: *Cultural factor, technological factor, governance structural factor, cooperative effectiveness, knowledge management.*

INTRODUCTION

Knowledge is an important source and asset to an organisation. Quality and money-saving products and services may be challenging to produce if knowledge is not managed well. The source of knowledge owed by an organisation is usually in an explicit,

implicit, and tacit form (Davies, 2015; Hussein & Khan, 2015; Newman & Conrad, 2000). Knowledge assets in explicit forms, potentially implicit and unspoken, are different from human resource, financial and building assets owned by an organisation. Due to the unique quality, complexity, and specific strategic values of knowledge, assets must be managed using different approaches from other asset management. An organisation can generally employ any approach to managing knowledge to sustain long-term competitive advantages.

As Hansen et al. (2003) identified, two distinct approaches emerge in knowledge management: managerial and technological. For this study, our focus is on the organisational approach to knowledge management. Within the expansive literature surrounding knowledge management, various authors have established a consensus regarding the hierarchical structure of knowledge, often called the "pyramid of knowledge." This conceptual framework is visually depicted in Figure 1.

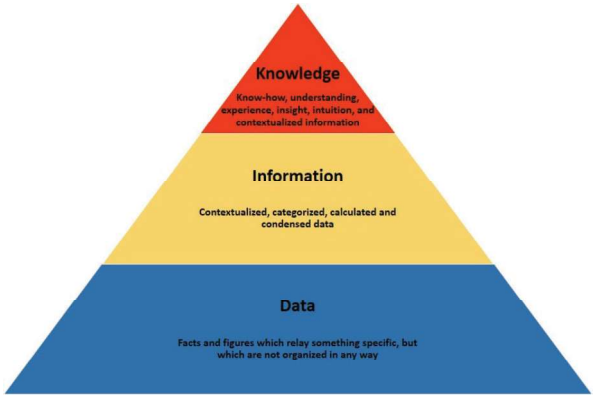

Figure 1: The pyramid of knowledge (Bernstein, 2009)

In Figure 1, which illustrates "the pyramid of knowledge," the definitions of key terms are outlined as follows:

i. *Knowledge*: Knowledge is a fusion of accumulated experience, ingrained values, personal beliefs, contextual insights, and intuitive understanding that individuals employ to interpret novel encounters and incoming information. Knowledge emerges as a culmination of validated and practically substantiated patterns that result from amalgamating fragments of incomplete information held by individuals.

ii. *Information*: Information manifests as structured or organised data that has undergone processing tailored to a specific objective, rendering it purposeful, valuable, and applicable within distinct circumstances. Information derives its significance within a given context and is a composition of interconnected knowledge elements.
iii. *Data*: Data consists of disparate, fixed factual details outside any context. These details require analysis, processing, and conversion to form comprehensive information. Data is characterised by its discrete nature, lack of organisation, and unprocessed state, representing raw measurements or unrefined observations.

This hierarchical framework of knowledge, information, and data serves as a fundamental construct for understanding the interplay and transformation of these concepts within knowledge management.

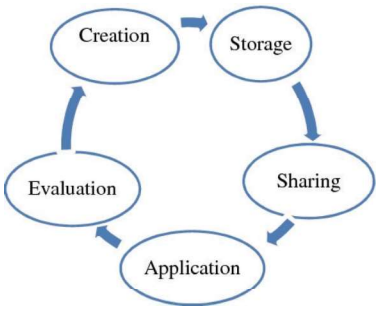

Figure 2: Knowledge management processes (Lachachi et al., 2013)

Numerous models elucidate knowledge management processes, illustrating the nexus between core activities, which range from a triadic sequence (generation, codification, transfer) to an extended heptadic progression (creation, acquisition, identification, adaptation, organisation, distribution, application) as delineated by King (2009). Notably, Lachachi et al. (2013) propose a comprehensive global framework for knowledge management processes, visually represented in Figure 2:

i. *Knowledge creation and acquisition* processes are designed to procure essential knowledge for tasks such as participating in seminars and obtaining insights from suppliers and customers. They also strive to foster novel ideas, optimal practices,

and patents (Wong et al., 2014). Knowledge creation can be defined as "the process of developing new knowledge".

ii. *Knowledge storage:* After creating and acquiring new knowledge, knowledge management mechanisms must be enacted to retain it, ensuring maximal impact and long-term reusability. Knowledge can take various forms for storage, such as databases and written documents (Kuah & Wong, 2013). Subsequently, the generated knowledge must find a place within the organisational memory to be preserved and archived (Alegre et al., 2011).

iii. *Knowledge sharing:* Knowledge sharing encompasses knowledge exchange among individuals within the organisation, constituting a two-way interaction (Françoise, 2008). The organisation must cultivate a culture that fosters knowledge sharing. The Community of Practice (CoP) method embodies comprehensive knowledge sharing within the group. Knowledge sharing also encompasses knowledge transfer, which entails unilateral interaction (Kuah & Wong, 2013). Sharing knowledge delineates how knowledge is transmitted and interpreted vertically and horizontally within the organisation, ultimately enhancing organisational processes and performance (Aboelmaged, 2014).

iv. *Knowledge application:* The primary objective of knowledge management is knowledge application (Aboelmaged, 2014). Application is marked by the creation of new products and services, enhancements in quality, cost reduction, and customer satisfaction (Aboelmaged, 2014), as well as the implementation of best practices post-creation (Wong et al., 2014).

v. *Knowledge evaluation:* Knowledge must be assessed to ensure its relevance and accuracy in defined competitive situations (Sammour et al., 2008).

Generally, knowledge management infrastructure consists of technological, governance, structural and cultural factors. Cooperatives are no exception to these infrastructures. However, due to the absence of empirical research, information on relevant infrastructure and factors for knowledge management infrastructure in cooperatives cannot be identified. Therefore, this research aims to identify knowledge management cultural

(human resources), governance structure (process) and technological factors and develop a Medium Cluster Cooperative Knowledge Management Practice Model.

This research is significant and essential to identify knowledge management cultural (human resources), governance structure (process) and technological factors that can increase the effectiveness of cooperatives and develop a Medium Cluster Cooperative Knowledge Management Practice Model based on the context of cooperatives in Malaysia. Through this study, existing knowledge can be improved by being guided by the best knowledge management practices. This can also help cooperative managers, policymakers, and researchers develop and implement effective knowledge management strategies in the cooperative sector. Accordingly, this paper examines the impact of knowledge management enablers in increasing cooperatives' effectiveness in Malaysia. The following section considers the relevant literature and sets out the hypotheses of this study. After, we present the discussion and suggestions. Then, the paper presents the results of the empirical research of achieving the goals as set out above.

LITERATURE REVIEW

Knowledge Management Factors (technology, governance structure, culture and organisational effectiveness)

Osborne (2004) presents a perspective on knowledge management (KM) as a multidisciplinary approach to utilising and overseeing organisational knowledge. This involves employing effective information management practices to foster organisational learning and acknowledging the contributions and labour values facilitated by technology. Technology is crucial in driving the social model towards generating fresh knowledge. By establishing a well-connected information and communication system within the organisation (Abualoush et al., 2018), the flow of information becomes more systematic, efficient, and readily accessible. Consequently, technology enables the organisation to explore novel knowledge, identify knowledge sources, create new knowledge, and effectively leverage existing knowledge to capitalise on emerging opportunities.

The governance structure of an organisation or work process is the second factor that has become the focus of this research. The governance structure should optimally encourage information sharing and ongoing cooperation among the employees, covering

each unit and department within the organisation. Formalised governance of knowledge management activities supports the organisation's ability to establish a strategy for transferring and sharing knowledge effectively and sustainably (Zyngier, 2008). Moreover, organisational leaders should act to influence their workers to implement knowledge management processes in the organisation. Organisational leaders should try to obtain support from higher management and convince subordinates to cooperate to develop a sound governance system in an organisation (Tang, 2017).

Culture is a knowledge management factor practised in an organisation, which is the main potential of the organisation in managing knowledge effectively. Organisational culture, including knowledge-oriented culture, flexibility, support, collaboration, trust, learning, power, and reliability, strengthens and weakens knowledge management efforts (Rosa et al., 2019). Organisations must create a suitable culture for implementing knowledge management, as it supports and encourages knowledge creation, sharing, learning, and application to benefit the organisation and its customers (Chang & Lin, 2015).

Knowledge management aims to establish new values and utilise knowledge to increase the organisation's effectiveness in achieving its goals and determining its success. Knowledge management is essential for organisations to properly utilise their resources and gain a competitive advantage (Dharma, 2021). By applying knowledge management, organisations can ensure good organisational knowledge, increase ideas, innovation, thinking, competence, and expertise, and make decisions based on important considerations and information (Naseem & Shah, 2020). Knowledge management is crucial in optimising human capital potential and achieving organisational goals.

This research refers to the model introduced by Gold et al. (2001). This model was chosen because it is suitable and practical in measuring the effectiveness of KM implementation in cooperatives. Effective knowledge management becomes essential in the context of cooperatives, as it impacts the cooperative's ability to achieve its goals while maintaining its sources and potential. This literature review aims to extend the current discussion by developing hypotheses related to the factors that affect the effectiveness of knowledge management in cooperatives, explicitly focusing on Technology, Governance Structure and Culture.

Knowledge management technologies have a positive impact on an organisation's effectiveness. Through the creation, accumulation, and utilisation of knowledge, organisations can enhance their performance (Rašula et al., 2012). Knowledge management technologies are crucial in establishing and sustaining effective knowledge management practices (Daryani et al., 2012). Organisations must focus on IT systems and the people who share knowledge to fully leverage knowledge management technologies' benefits (Bharadwaj et al., 2015).

Hypothesis 1: *Knowledge management technologies have a positive impact on the effectiveness of an organisation.*

Knowledge management governance structure plays a crucial role in influencing the effectiveness of an organisation (Zyngier et al., 2004; Zyngier & Burstein, 2011). The governance structure established can determine the organisation's ability to manage its knowledge (Zheng et al., 2010). KM governance drives the effective implementation of KM strategy and leads to realising strategic benefits. Governance should be applied to knowledge management in large organisations, ensuring performance management is practised and aligned with organisational needs. Therefore, an effective knowledge management governance structure enhances organisational effectiveness.

Hypothesis 2: *Knowledge management governance structure influences the effectiveness of an organisation.*

Knowledge management culture plays a vital role in the effectiveness of an organisation. Sadeghian et al. (2013) stated that knowledge management, especially knowledge dissemination and responsiveness to knowledge, has a significant and positive relationship with organisational effectiveness. However, research findings do not support the role of organisational culture as a moderator in the relationship between knowledge management and organisational effectiveness (Lo et al., 2017). Therefore, organisations should develop a knowledge management culture to increase efficacy.

Hypothesis 3: *Knowledge management culture plays a crucial role in the effectiveness of an organisation.*

Figure 3 depicts the research model. The knowledge management framework is an assemblage of elements (or factors) operating collaboratively in diverse combinations, functioning as a system to bolster the organisational knowledge reservoir. This framework further guarantees performance and learning, fostering sustainable development (Gorelick & Tantawy-Monsou, 2005).

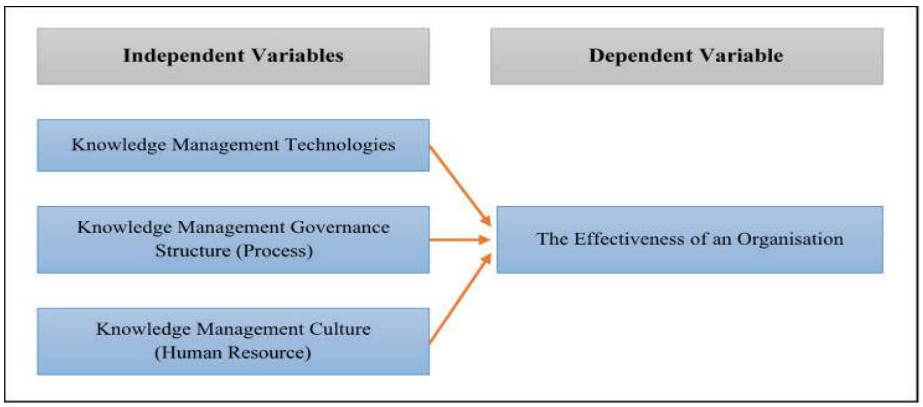

Figure 3: Theoretical framework of knowledge management in Malaysia

RESEARCH METHODOLOGY

The research population consists of medium cluster cooperatives in Malaysia, assuming that the cooperatives' earnings are similar to those of the more significant cluster category, which is financially capable of applying KM and can contribute to the cooperative and national economy development. This research adopts a purposive sampling method. Purposive Sampling refers to the sampling procedure of respondents who have specific characteristics. This study examines knowledge management practices, especially in Malaysia's small and medium cluster cooperatives. Only medium cluster cooperatives with an income of RM1 million to RM4.9 million were selected as respondents (Berawi, 2017). The sample size population is 545 medium cluster cooperatives obtained from the Suruhanjaya Koperasi Malaysia (SKM) database. The sample size determination strategy is determined using a calculator from Raosoft with a confidence level of 95 percent. The minimum sample size required for data collection is 226, a statistically valid sample size based on the Raosoft sample size calculator (Baker, 2012).

Questionnaires commonly collect quantitative data on attitudes, beliefs, and behaviours (Yongqi, 2016). Questionnaires have been used for years in various disciplines, such as applied linguistics, social sciences, psychology, sociology, marketing, and geography (Bee & Murdoch-Eaton, 2016; Bern et al., 2018; Iwaniec, 2019). Almost 300 questionnaires are distributed in-person and online (Google Form) to the chosen cooperative management and administration. Two hundred thirty samples are successfully obtained. The questionnaire used in this research is adapted from Gold et al. (2001). This questionnaire has gone through a pre-test process that was checked and verified by four expert consultants skilled and experienced in knowledge management from Universiti Teknologi Mara (UiTM) Selangor, Malaysia. The researcher conducted a frequency analysis to ensure that all data was clean. As a result of the study, no missing value was detected. This is because the researcher ensures that the respondents answer all the questions before collecting the questionnaire, and the Google form has also been set as required. To meet the research objectives, knowledge management, cultural (human resource), governance structure (process), and technological factors that can increase the effectiveness of cooperatives are analysed using Bootstrapping analysis, which is available in SmartPLS v3.2.9 software.

RESEARCH ANALYSIS AND FINDINGS

Demographic Profile

This section describes the analysis of the demographic profile of 230 cooperatives. The demographic factors analysed include the cooperative's primary function, the period it has been in operation, the number of management staff, and the acquisition of the cooperative. The analysis is made to understand the cooperatives' background, Table 1.

Table 1: Demographic Profile

Background of Cooperative		Frequency	Percentage (%)
Cooperative Function	Credit	79	34
	Consumer	44	19
	Agriculture	36	16
	Transportation	34	15
	Services	25	11
	Housing	7	3
	Construction	3	1
	Industrial	2	1
Cooperative Operation Period	1 to 24 years	67	29
	25 to 48 years	108	47
	49 to 72 years	41	18
	73 to 96 years	14	6
Number of Cooperative Management Employees	1-5 People	137	59
	6-10 People	50	22
	11-15 People	21	9
	16-20 People	9	4
	More than 20 People	13	6
Cooperative Earnings	RM 1-2 Million	184	80
	RM 2.01 – 3 Million	20	9
	RM 3.01 – 4 Million	14	6
	RM 4.01 – 5 Million	12	5

The analysis also revealed that the majority of cooperative functions are credit-based, 34% (79 cooperatives), followed by consumer cooperatives at 19% (44 cooperatives), agriculture at 16% (36 cooperatives), and transportation at 15% (34 cooperatives). The remaining cooperative functions include services at 11% (25 cooperatives), housing at 3% (7 cooperatives), and construction at 1% (3 cooperatives). Among the cooperatives involved, the majority (47% or 108 cooperatives) have been operating for 25 to 48 years, followed by 29% (67 cooperatives) operating for one to 24 years, 18% (41 cooperatives) operating for 49 to 72 years, and 6% (14 cooperatives) operating for 73 to 96 years.

Furthermore, the analysis found that 59% (137 cooperatives) have one to five employees in their management team. Meanwhile, 22% (50 cooperatives) have 6 to 10 management staff members. Additionally, 9% (21 cooperatives) have 11 to 15 employees, 4% (9 cooperatives) have 16 to 20 employees, and 6% (13 cooperatives) have more than 20 employees. The analysis revealed that 80% (184 cooperatives) have less than RM2

million yearly earnings. Meanwhile, only 9% (20 cooperatives) have annual revenues between RM2 million and RM3 million. Approximately 6% (14 cooperatives) have yearly earnings between RM3 million and RM4 million, and a small portion (5%), 12 cooperatives, have earnings between RM4 million and RM5 million.

Measurement Model

The validity and reliability of measurement models for construction are evaluated using structured analysis as SmartPLS suggested, including internal consistency reliability, indicator reliability, convergent validity, and discriminant validity. Based on Table 2, the results show that all factors used contain satisfactory internal consistency reliability because the Composite Reliability (CR) values for each factor in this research exceed the 0.7 threshold value.

Table 2: Item composite reliability (CR)

Factor	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Technology	0.841	0.847	**0.843**	0.519
Governance Structure	0.916	0.918	**0.916**	0.550
Culture	0.948	0.951	**0.947**	0.583
Organisational Effectiveness	0.962	0.964	**0.962**	0.645

Next, the outer loading analysis is conducted to detect item removal for variables below the 0.7 threshold value. The study reveals five technology and three governance structure variables below the threshold value. Therefore, these items are removed, and the rest remain for further model development and analysis. Figure 4 shows such indicators being removed from the relevant factors.

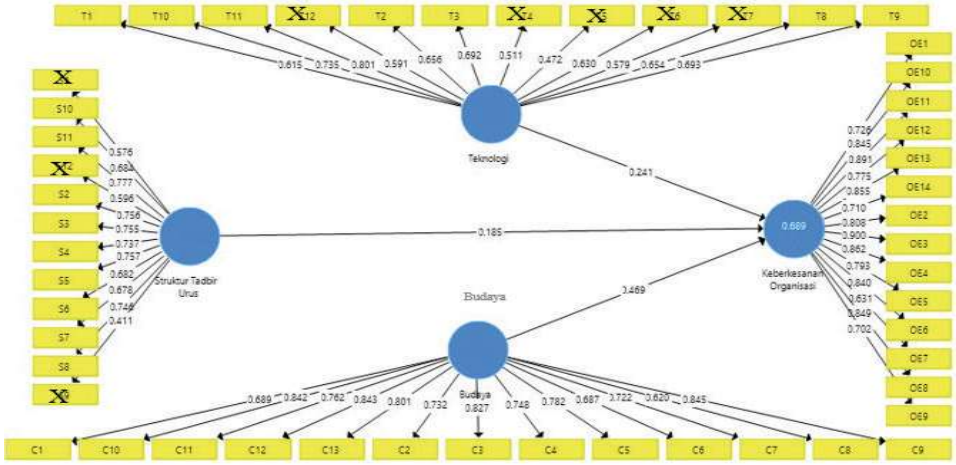

Figure 4: Removed indicators

Indicator reliability analysis refers to the loadings on all remaining items for the model development. The indicator reliability analysis result is satisfactory when the values of item loadings are at least 0.7 and significant to at least 0.05. The analysis shows that three culture items, two organisational effectiveness items, two governance structure items, and three technology items in the measurement model depict values below 0.7. However, all items are trusted because the P-value for all four variables is 0.000.

Convergent validity analysis is continued to fulfil the measurement model's validity testing criteria. Convergent validity for all factors in this research has AVE threshold values of more than 0.5. Thus, the results in Table 3 show that all the factors used have sufficient convergent validity.

Table 3: Convergent validity

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Culture	0.948	0.951	0.955	**0.619**
Organisational Effectiveness	0.962	0.965	0.966	**0.670**
Governance Structure	0.916	0.918	0.931	**0.603**
Technology	0.864	0.867	0.896	**0.553**

Lastly, the measurement model for discriminant validity is valued by using two types of measurement: i) Fornell and Larcker's (1981) criteria and ii) cross-loading. It is noted that the measurement model will have discriminant validity when i) AVE to the power of two is more than the correlation between measurement and all measurements, and ii) loading indicators are more than each variable compared to other variables. Therefore, based on the results in Table 4, the discriminant value is more than 0.7 off-diagonal value in which culture (0.787), organisational effectiveness (0.818), governance structure (0.777) and technology (0.744) comply with the Fornell-Larcker criteria.

Table 4: Discriminant validity value based on Fornell-Larcker criteria

	Culture	Organisational Effectiveness	Governance Structure	Technology
Culture	**0.787**			
Organisational Effectiveness	0.757	**0.818**		
Governance Structure	0.698	0.705	**0.777**	
Technology	0.666	0.695	0.737	**0.744**

Figure 5 shows the valid factors and indicators based on Fornell and Larcker's analysis. These validated factors and indicators are models generated by this research.

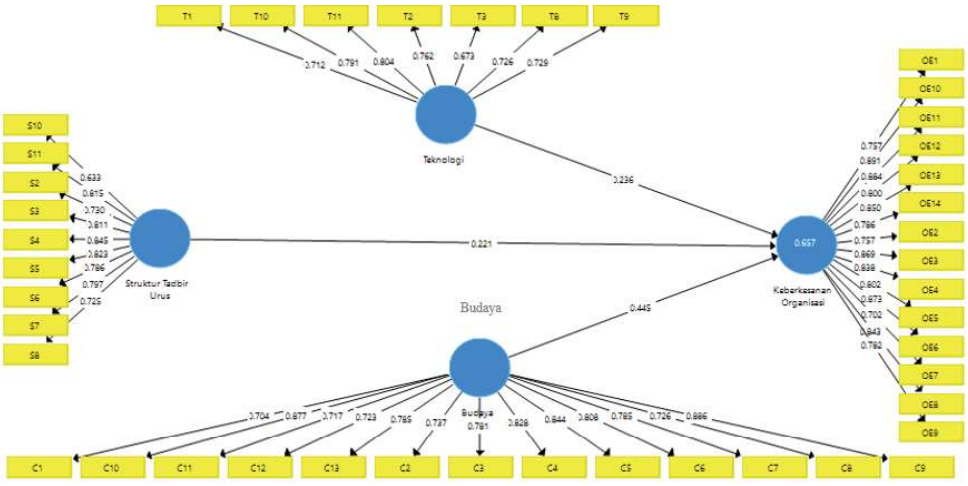

Figure 5: Validated indicators

The following analysis determines discriminant validity to examine indicator loadings for all correlated variables. The cross-loading analysis result supports the discriminant validity model. Loading values for each variable item vividly segregate each latent variable as a theory in the conceptual model. Therefore, the output cross-loading verifies that the second evaluation of the discriminant validity measurement model is satisfactory. Referring to the analysis based on Fornell and Larcker criteria and cross-loadings, this research concludes that the measurement model's validity is proven through discriminant validity values.

Structural Model Measurement

The legitimacy of structural model measurement is assessed using five (5) structured evaluation steps as suggested by SmartPLS that include Collinearity (VIF- variance inflation factor), Path Coefficients, Effect Size (f2), Coefficient of Determination (R2) and Predictive Relevance (Q2). Based on the Collinearity Statistics analysis, this research uses the maximum value of the Variance Inflation Factor (VIF), which is not more than five, as suggested by Ringle et al. (2015), to allow research factors and indicators to be accepted. Based on Table 5, all VIF values of factor compatibility are not more than five. Hence, elements of bias do not exist. Conclusively, all research factors are accepted for the analysis.

Table 5: VIF value

	Organisational Effectiveness
Culture	2.160
Governance Structure	2.629
Technology	2.424

Therefore, using the SmartPLS bootstrapping function, the analysis of the Path Coefficient is measured further for every path that connects three latent variables in the structural model to evaluate the significant level of each factor. Thus, the t-statistics value is significant at 1.97 and above. Table 5 shows that the t-statistics values for all related factors are more than 1.97, and the critical values (p-values) are less than 0.05. These prove that the structural model can be accepted. Hence, the result of t-statistics and p-values on all three dependent variables show that culture is the most significant variable

in determining the success of an organisation in knowledge management. However, technology and governance structure are substantial variables but have less merit than culture. This shows that the KM process will be the key focus of organisational effectiveness.

For the effect size analysis (f^2) based on Cohen (1988), the f^2 threshold value at 0.02 is low, 0.15 is moderate, and 0.35 is significant. Therefore, f^2 values for all three variables in this research are at a moderate level: Culture (0.265), governance structure (0.055), and technology (0.067), as shown in Table 6.

Table 6: Path coefficients and effect size

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	p-values	Effect size (f^2)
Technology – Organisational Effectiveness	0.236	0.234	0.061	3.877	**0.000**	**0.067**
Governance Structure - Organisational Effectiveness	0.221	0.227	0.069	3.213	**0.001**	**0.055**
Culture - Organisational Effectiveness	0.445	0.445	0.082	5.417	**0.000**	**0.265**

Figure 6 shows that Technology, Governance Structure and Culture can explain 65.7% of variants in Organisational Effectiveness. Hence, the Coefficient of Determination (R^2) value is 0.657 (65.7%), which implies that the model can be accepted and proven as a working model in the context of KM practice. In this investigation, the R^2 threshold value below 0.25 is weak, $0.25 < r < 0.75$ is moderate, and more than 0.75 is strong (Hair et al., 2017). So, the fact shows that all R^2 values (0.35, 0.3, and 0.5) produced for the Coefficient of Determination analysis are more than the threshold value of 0.25. The relationship among the analysed factors is moderate.

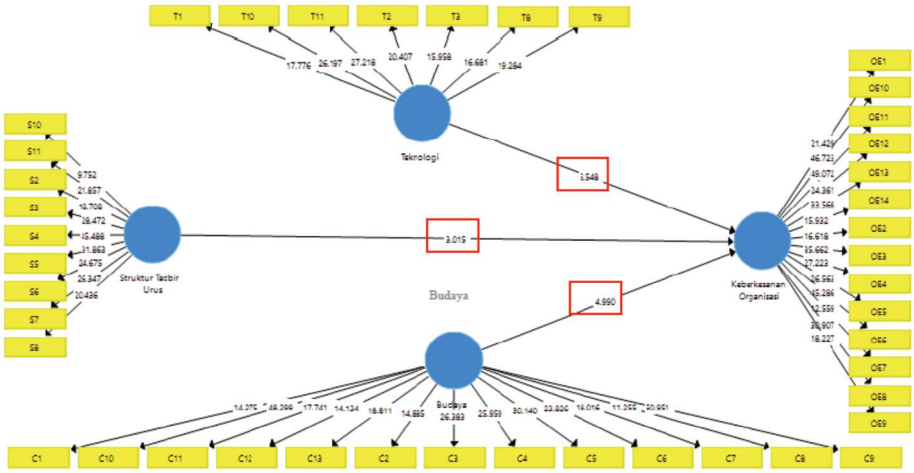

Figure 6: Structural Model Results using the SmartPLS Algorithm

Table 7: Analysis of predictive relevance (Q^2) (Blindfolding)

	The sum of Squares of Observations (SSO)	The sum of the Squared Estimate of Errors (SSE)	Q^2(=1-SSE/SSO)
Culture	2990.000	2990.000	
Organisational Effectiveness	3220.000	1851.127	0.425
Governance Structure	2070.000	2070.000	
Technology	1610.000	1610.000	

Lastly, in Table 7, this research uses Predictive Relevance (Q^2) advanced analysis to show the affiliation of dependent variables (organisational effectiveness) with independent variables (technology). By setting the Omission Distance at 7, Q^2 = 0.425 is obtained, and this value shows that this model is highly predictive. This 0.425 value indicates that the organisational effectiveness dependent variable was projected high (accepted) cumulatively by all three independent variables. This finding shows that the prediction of the research observable parameter (items of technology, governance structure, and culture) is higher than the prediction of the estimation parameter (Geisser, 1975).

DISCUSSION AND CONCLUSION

This research proposes that the Knowledge Management Practice Model developed from this research be evaluated on small and big cooperatives in Malaysia to get the overall picture of knowledge management practice in cooperatives. The findings of such a study can serve as guidelines to plan and determine KM's direction, mainly to improve cooperative performance in Malaysia. In addition, a study using the original model can be applied to micro, small and big cooperatives to observe the implementation level of knowledge management in cooperatives.

The analysis results prove that the knowledge management practice among medium cluster cooperatives in Malaysia is high in measuring governance structure, culture, and technology, impacting organisational effectiveness. This research's findings align with the results obtained by the study conducted by Othman et al. (2018) and Razaei et al. (2021). The Knowledge Management Practice Model in cooperatives is valid and accepted when evaluating structural models. Moreover, this research proposes a Medium Cluster Cooperative Knowledge Management Practice Model that is developed using SmartPLS, showing 13 cultural (human resource) factors, nine (9) governance structural (process) factors, seven (7) technological factors and 14 organisational effectiveness factors. Hence, knowledge management has become strategically crucial in driving competitive cooperatives.

This study aims to determine knowledge management factors that increase cooperative effectiveness. In Table 8, this objective can be achieved by analysing the value of each variable that contributes to Predictive Relevance (Q2) using the performance-importance analysis approach. The Cross-Validated Communality technique findings diagram under the Blindfolding analysis below shows the Q2 value for culture = 0.561, organisational effectiveness = 0.617, governance structure = 0.506, and technology = 0.402.

Table 8: Blindfolding analysis for each factor

	SSO	SSE	Q2(=1-SSE/SSO)
Culture	2990.000	1312.844	0.561
Organisational Effectiveness	3220.00	1233.684	0.617
Governance Structure	2070.000	1023.358	0.506
Technology	1610.000	963.573	0.402

The interpretation of relevance of importance and implementation of each factor is summarised in the following table 9:

Table 9: Importance and implementation of each factor

Factor	Comparison Level of Interest	Comparison Level of Implementation
Culture	It is less crucial than governance structure and technology in the context of organisational effectiveness.	They are practised and given the highest focus compared to governance structure and technology.
Governance Structure	It is more critical than culture but less vital than technology in the context of organisational effectiveness.	Priority is almost the same as culture and is given more priority than technology.
Technology	Most important in the context of organisational effectiveness.	Low priority compared to governance structure and culture.

The predictive relevance analysis (Q2) concluded that if the cooperative wants to be more effective and competitive in management, it should emphasise the KM technology factor in implementation (investment). The Q2 analysis found that KM Culture is insignificant but is given the highest priority. The cooperative knowledge management governance structure is on the right track and is considered to be implemented.

Suggestions to other researchers interested in further studying Knowledge Management Practices in Cooperatives in Malaysia must focus on identifying criteria such as tacit and explicit knowledge values, especially for cooperative leaders who can contribute to the cooperative's efficiency and success. Through this study, the criteria or set of successful

board directors can be documented and modelled as a benchmark for other cooperatives to achieve better performance.

The medium cluster cooperative KM practice model that resulted from this study needs to be tested through a study of small and large cluster cooperatives in Malaysia. This proposed study can provide an overview of knowledge management practices in cooperatives. The study's findings can be used as a guide to plan and determine the direction of KM specifically for improving the performance of cooperatives in Malaysia.

REFERENCES

Abualoush, S., Bataineh, K., & Alrowwad, A. A. (2018). The role of knowledge management process and intellectual capital as intermediary variables between knowledge management infrastructure and organisation performance. *Interdisciplinary Journal of Information, Knowledge, and Management*, *13*, 279-309.

Aboelmaged, M. G. (2014). Linking operations performance to knowledge management capability: the mediating role of innovation performance. *Production Planning & Control*, *25*(1), 44-58.

Alegre, J., Sengupta, K., & Lapiedra, R. (2013). Knowledge management and innovation performance in a high-tech SME industry. *International Small Business Journal*, *31*(4), 454-470.

Berawi, F. M. (2017). Research Methodology: Thesis Writing Guide (UUM Press). UUM Press.

Bernstein, J. H. (2009). The data-information-knowledge-wisdom hierarchy and its antithesis. http://journals.lib.washington.edu/index.php/nasko/ar article/view file/12806/1128.

Baker, A. (2012). Sample size selection in energy efficiency research and evaluation of the use and abuse of the coefficient of variation. In *The International Energy Program Evaluation Conference, research into action was conducted in Rome, Italy*.

Bharadwaj, S. S., Chauhan, S., & Raman, A. (2015). Impact of knowledge management capabilities on knowledge management effectiveness in Indian organisations. *Vikalpa*, *40*(4), 421-434.

Bern Schmidt, S., & Rekgai, E. (2018). MHPE: An Introduction to a Complete Evaluation Tool. *J Transl Neurosci*, *3*(1), 1.

Bee, D. T., & Murdoch-Eaton, D. (2016). Questionnaire design: The good, the bad and the pitfalls. *Archives of Disease in Childhood-Education and Practice*, *101*(4), 210–212.

Chang, C. L. H., & Lin, T. C. (2015). The role of organisational culture in the knowledge management process. *Journal of Knowledge Management*, *19*(3), 433–455.

Cohen, J. (1988). Statistical power analysis for the behavioural sciences. Mahwah, NJ: Lawrence Erlbaum

Daryani, S. M., Khodaverdi, Y., Rasouli, E., & Shareghi, B. (2012). The importance of knowledge management technologies in organisations' performance improvement. *Life Science Journal*, *9*(4), 4695–4699.

Davies, M. (2015). "Knowledge–Explicit, implicit, and tacit: Philosophical aspects". *International encyclopedia of the social & behavioural sciences*, pp. 13, 74–90.

Dharma, I. B. A. S. (2021). The implementation of knowledge management in optimizing the potential of human capital in PT Sari Dharma Mandiri. *Turkish Journal of Computer and Mathematics Education (TURCOMAT)*, *12*(10), 1817-1821.

Françoise, R. (2008). Transfert des connaissances: Stratégies, moyens d'action, solutions adaptées à votre organisation. *Lavoisier, Paris*, 278.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research*, *18*(1), 39-50.

Geisser, S. (1975). The predictive sample reuse method with applications. Journal of the American Statistical Association, 70(350), 320–328.

Gold, A. H., Malhotra, A., & Segars, A. H. (2001). Knowledge management: An organisational capabilities perspective. *Journal of Management Information Systems*, *18*(1), 185-214.

Gorelick, C., & Tantawy-Monsou, B. (2005). For performance through learning, knowledge management is a critical practice. *The learning organisation*, *12*(2), 125–139.

Hair, J.F., Hult, G.T.M., Ringle, C.M. and Sarstedt, M. (2017), A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM), Sage, Thousand Oaks, CA.

Hansen, M. T., Nohria, N., & Tierney, T. (2003). Quelle est votre stratégie de gestion du savoir?. *Filemanagement du savoir en pratique. Paris: Édition d'Organisation*, 117-149.

Hussein, T., & Khan, S. (2015). Knowledge Management is an instrument for implementation in Retail Marketing. *MATRIX Academic International Online Journal of Engineering and Technology*, *3*(1), 1-6.

Iwaniec, J. (2019). Questionnaires: Implications for effective implementation. In *the Routledge Handbook of Research Methods in Applied Linguistics* (pp. 324–335). Routledge.

King, W. R. (2009). Knowledge management and organizational learning the basics of knowledge management. *Annals of Information Systems, 4*(2), 3–13.

Kuah, C. T., & Wong, K. Y. (2013). Data Envelopment Analysis is a model for measuring knowledge management performance in Malaysian higher educational institutions. *Information Development*, *29*(3), 200-216.

Lachachi, A., Kerzabi, A., & Houhou, M. (2013). The formalisation of the knowledge management in the managerial approach in the Algerian Firms: Case of the Territorial Direction of Algeria Telecom of Tlemcen. *Mediterranean Journal of Social Sciences*, *4*(6), 191.

Lo, M. C., Mohamad, A. A., Ramayah, T., Abdullah, M. A., & Lim, M. C. (2017). The role of knowledge management on organisational effectiveness: Organisational culture as the moderator. *International Journal of Business and Society*, *18*(S4), 808-818.

Naseem, S., & Shah, S. S. H. (2020). How knowledge management plays an effective role in organisations to make HRM more efficient by using system dynamics? *Journal of Asian Business Strategy*, *10*(1), 26.

Newman, B. D., & Conrad, K. W. (2000). A Framework for Characterizing Knowledge Management Methods, Practices, and Technologies. *PAKM*, 1–11.

Osborne, M. (2004). Making the most of the best: Formulating a knowledge management strategy for a government advisory body. *Australian Journal of Public Administration*, *63*(3), 43–52.

Othman, A., Ismail, S., Yahya, K., & Ahmad, M. (2018). Critical success factors in implementing knowledge management in consultant firms for the Malaysian construction industry. *Management Science Letters*, 8(5), 305–316.

Rašula, J., Bosilj Vukšić, V., & Indihar Štemberger, M. (2012). The impact of knowledge management on organisational performance. *Economic and business review*, *14*(2), 3.

Rezaei, F., Khalilzadeh, M., & Soleimani, P. (2021). Factors affecting knowledge management and its effect on organisational performance: Mediating the role of human capital. *Advances in Human-Computer Interaction*, 2021,16.

Ringle, C., Da Silva, D., & Bido, D. (2015). Structural equation modeling with the SmartPLS. *Bido, D., da Silva, D., & Ringle, C.(2014). Structural Equation Modeling with the Smartpls. Brazilian Journal of Marketing*, *13*(2).

Rosa, A. T. R., Nurhidayati, F., & Hafid, H. (2019). Effectiveness of knowledge culture-based organisation management for education institutions. In *IOP Conference Series: Earth and Environmental Science* (Vol. 382, No. 1, p. 012030). IOP Publishing.

Sammour, G., Schreurs, J., Al-Zoubi, A. Y., & Vanhoof, K. (2008). The role of knowledge management and e-learning in professional development. *International Journal of Knowledge and Learning*, *4*(5), 465-477.

Sadeghian, S., Kafashpoor, A., & Lagzian, M. (2013). Assessing the impact of organisational culture and structure on organisational effectiveness through knowledge management case study: Mashhad's science and technology park. *International Journal of Management Sciences and Business Research*, *2*(12).

Tang, H. (2017). Effects of leadership behaviour on knowledge management and organization innovation in medicine and health sciences. *Eurasia Journal of Mathematics, Science and Technology Education*, 13(8), 5425–5433.

Wong, K. Y., Tan, L. P., Lee, C. S., & Wong, W. P. (2015). Knowledge management performance measurement: Measures, approaches, trends and future directions. *Information Development*, *31*(3), 239-257.

Yongqi Gu, P. (2016). Questionnaires in language teaching research. *Language Teaching Research*, *20*(5), 567-570.

Zheng, W., Yang, B., & McLean, G. N. (2010). Linking organisational culture, structure, strategy, and organisational effectiveness: Mediating role of knowledge management. *Journal of Business Research*, *63*(7), 763–771.

Zyngier, S. (2008). Knowledge management governance. In *Knowledge management: Concepts, methodologies, tools, and applications* (pp. 2276–2284). IGI Global.

Zyngier, S., & Burstein, F. (2011). Knowledge management governance as a mechanism for sustainable organisational knowledge creation and transfer. *International Journal of Strategic Change Management*, *3*(3), 211-229.

Zyngier, S., Burstein, F., & McKay, J. (2004). Knowledge management governance: A multifaceted approach to organisational decision and innovation support.