Development of Multi Criteria Tacit Knowledge Acquisition Framework (MC-TKAF) to Support Talent Development Intervention Program in A Malaysian Comprehensive University

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ABSTRACT

In Higher Education Institutions (HEI), the process of retaining leadership succession is critical since it has involved the process in choosing the right person. The purpose is to steer the institutions to sustain organizations' excellence for academic leadership and management (ALM) position. Many ALM of Malaysia HEIs are struggling to find the right successor to replace their roles as they do not have yet any firm criteria in evaluating the competence among their potential successors in their home institutions. This study aims to propose a multi criteria tacit knowledge acquisition framework (MC-TKAF) for supporting talent development intervention program in Malaysia HEIs. It will be based on cognitive apprenticeship, socialization and informal learning theory which mostly used in acquiring knowledge from expertise to overcome talent bottleneck among novice. The main process of this study will use Fuzzy Delphi among ALM in Malaysian HEIs to get consensus judgement about the right indicator to evaluate tacit knowledge competence. Three phases involved are: Phase 1 is to analyze the existing Tacit Knowledge Acquisition (TKA) by finding the suitable parameters to construct intended framework, Phase 2 is to use the findings in Phase 1 in order to develop a new framework of Tacit Knowledge Acquisition Framework (TKAF) that suits with HEI environment. Finally, Phase 3 is to evaluate the practicality of Tacit Knowledge Acquisition Framework (TKAF) by using Multi Criteria Decision Making (MCDM) approach in supporting Talent Development Intervention Program. The objective of this paper is to propose the multi criteria tacit acquisition framework by using MCDM technique as a talent performance indicator. This paper basically will focus on Phase 1 of the research design. The constructed indicators in this paper could be served as a reference for the HEI industries to establish applicable talent performance indicators according to the properties of each TKA used.

Key words: Talent Development Intervention, Talent Performance Indicator, Multi Criteria Decision Making, Tacit Knowledge Acquisition.

1. INTRODUCTION

Recent years, succession planning and managing of executive transitions in the higher learning institutions have appeared as significant problems [1], [2].These are due to the loss of leadership skills and implicit talent of predecessor academic leaders. Most of them come from generation of baby boomers, who are sooner or later, will retire and leave the organization. The proven skills and expertise of predecessor among academic leadership and management (ALM) in HEIs are not only benefit to their home organizational units, but can also benefit the entire organization. In most universities, some still do not understand how intellectual capital is formed and how tacit knowledge is shared amongst its employees [3]. Yet the expertise and knowledge that embedded in predecessor of ALM is not able to be molded with specific acquisition formulation due to unknown reason. If we can understand the underlying reason behind what causes knowledge to be tacit, especially during the process of transfer, we can select a transfer mechanism that targets the cause, making the transfer more efficient and, in some cases, saving it from failure. One of the factors contributing to this phenomenon is lacking of effective evaluation of tacit knowledge acquisition that should be adopted in HEI environment as intrapersonal catalyst [4] in Talent Development Intervention (TDI) Program. Furthermore, in HEIs, the process of eliciting and acquiring tacit knowledge, during TDI program among academicians in order to fill in ALM roles is not yet further explored. Further research is needed to ensure that the academicians in university embrace the right strategy via the transfer of tacit knowledge among the ALM to support the performance of evaluation in TDI. This paper is basically to propose the multi criteria tacit acquisition framework by using MCDM technique as a talent performance indicator.

1.1 Background of Study

In a study done in 2008 by a group of academicians in Australia [5], academic management or leadership was said to not have a solid foundation to form and prevent the tacit loss among their senior leaders or managers. It is due to lack of awareness and support towards retention of the tacit

Management	Leadership
More operational – a focus on day to day matters – HR, budget, facilities	More strategic
More focus on the present	More focus on the future
Ensuring the unit functions efficiently and effectively	Setting the vision for where the unit will head
Managers do things right	Leaders do the right thing
Usually a formal position	Can be formal or informal
Managers ask how	Leaders ask why
Skill (competency) based	Diagnostic (capability) based

Figure 1: Management versus Leadership [5]

knowledge among senior leaders in this field. According to [6],due to certain characteristic of tacit knowledge, this makes it more difficult to be monitored and controlled since its usage can be validated only upon its application. Factors that contributing to this phenomenon is also due to the lack of effective evaluation towards the process of transfer; acquisition and elicitation from expert towards the novice. However, these challenges can be prevented by making both party aware of the concept of tacit-ness, having cross departmental training, and monitoring off-job interactions via Talent Development Intervention (TDI) program. Through TDI program, the potential candidates for ALM will be able to develop their tacit knowledge such as competency, skill and experience with the help of their ALM predecessor.

Competency is one of the elements that required in evaluating potential ALM such as managerial competence[7] and leadership competence[5]. The difference between management and leadership in general can be seen in Figure 1 which clearly describe that management are more towards operational task and leadership is more towards strategic planning in an organization.

However, skill and experience can only be gained from the process of acquisition and elicitation [8] Tacit knowledge competence plays a gap between management and leadership competence as seen in Figure 2. It plays an important role for ALM candidates to do their daily tasks. It shows how much them actually gains the benefits from acquisition and elicitation process through their predecessor act of sharing. A research done by [9] clearly show TK owned by senior co-workers has a significant relationship with competencies of junior co-workers. This also being supported by [10] concluded that the higher tacit knowledge in skilled employees is strongly linked to greater tacit acquisition of knowledge through their inexperienced subordinates.
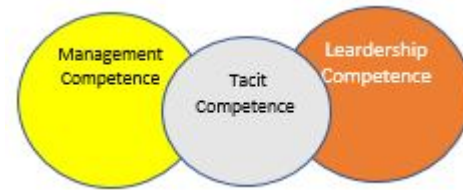

Figure 1: Set of ALM Competence

In the next section, definition on talent development intervention, tacit knowledge management, fuzzy Delphi and multi criteria decision making will be explained in details.

2. LITERATURE REVIEW

2.1 Talent Development Intervention

In order to sustain the talent among academicians in HEIs, Talent Development Intervention (TDI) program is proposed to retain the process of recruiting, selecting and developing the potential candidates [4]. According to [11],TDI in the workplace can be classified into five groups: T&D, individual, organization ,team, and global-level interventions. The focus in this paper are more towards individual TDI compared to other mentioned groups. Many authors like [4], [12] claim that TDI can be vary starting from Coaching, Action learning, Mentoring, E-learning to a close collaboration with an experienced person (assisting, apprenticeship, mentoring, and patronage) as depicted in Table 1. These kinds of programs are basically existing without getting recognized explicitly by the HEIs management as a platform to evaluate and develop talent among academicians. All of these are to support the process of eliciting and acquiring tacit knowledge of the expertise before they leave their roles to new employees.

2.2 Tacit Knowledge Management

Two types of method which are used for retaining tacit knowledge are acquisition and elicitation. Acquisition is defined as finding a proper way to extract knowledge from experts' minds[13]. Elicitation by other means is defined as some types of expert's knowledge are specific and require specific methods to extract [14] for the purpose to preserve knowledge and experience, improvement of knowledge reuse, and acceleration of processes.

In a few studies [10],[6],[15] researchers try to understand on how expertise retain their tacit knowledge towards novice development through acquisition or elicitation, such as from acquisition mechanism like training method [16] that can influence tacit sharing behavior among employees, or [17] rich blend of learning that can support the development of codified, cultural and personal knowledge. Other eliciting technique used to get expertise knowledge is using such as cognitive map [18], [19] ,cause map [3], [20], repertory grid [21]–[23] and etc. for different kind of industry.

Table 1: TDI Strategy

Author	TDI
[4]	Coaching, Action learning, Mentoring, E-learning
[12]	a close collaboration with an experienced person, team work, training in model situations, goal-target interviews, coaching, job rotation, short term attachments and excursions

In that essence of evaluating tacit knowledge competence among novice, the assessment of tacit evaluation requires an individual or expertise to use intuition, judgment, and feeling. Much more thought must go into this type of evaluation. Yet, it is type of evaluation that is most likely to truly measure the effectiveness of tacit knowledge acquisition. For example in a field such as Police and Military, the usage of tacit evaluation to test tacit knowledge competence among new recruiters is done by using Situational Test Judgement [24]–[26]. Another alternative is to evaluate tacit knowledge competence is through talent performance tools by using Tacit Knowledge Acquisition (TKA) approach such as coaching [27]–[29],mentoring [30], [31], job rotation [33],storytelling [34], [35] and etc. However, each existing study on TKA approach from previous literatures are conducted separately to evaluate the performance. This study attempts to integrate separate TKA variables into integrated talent performance indicator in TDI program in HEI.

In the next sub section, the formation process of theoretical framework and justification of its usage to develop MC-TKAF will be explained further.

Theoretical Framework

Five theoretical Frameworks have been chosen to be base for our proposed framework to determine the right indicator to measure tacit acquisition among ALM candidate. There are Cognitive apprenticeship model (CAM), Socialization: SECI, Informal Learning, Self-Efficacy Theory and Dreyfus model as defined in Figure 3.

Apprenticeship is based on Cognitive apprenticeship model (CAM) is a process where a master of a skill teaches that skill to an apprentice [36]. CAM are widely used in many aspect of apprenticeship, where it is the vehicle for transmitting the knowledge required for expert practice in fields from painting and sculpting to medicine and law [36]. Attempts are made in applying CAM in others field such as leadership training program to develop leadership competencies[37]. Six elements are involved such as Modelling, Coaching, Articulation, Reflection, Scaffolding and Exploration. Only one aspect of CAM that is used in this study which is coaching [38].

Figure 3: Theoretical Model

Coaching is widely used in many industry as a tacit evaluation of performance of an employee [38]–[40] for short period of time. Despite of widely used, coaching is one under-developed field of study in academic leadership development [40].In university ,a coach may work with a colleague on a more short-term basis to identify and reach specific goals, such as tenure, promotion, or obtainment of a leadership position[40].

SECI as defined by [41] is a process of knowledge that started with socialization, which is the process of converting new tacit knowledge through shared experiences in day-to-day social interaction then later will be turned to tacit knowledge that can be articulated into explicit knowledge through the process of externalization. Socialization is one of main features that help to acquire the tacit knowledge regardless the nature of the organization[13]. Two aspects in Socialization that used in this study are mentoring[42] and job rotation [33].

Mentoring is visualized as the effective transfer and retention of knowledge eventually depends on excellent relations between professionals and less experienced staff ; these relationships rely on excellent communication and powerful motivation of the expert (non-expert) to share in the long term.. It is also provide a foundation for the development between expert and novice [43]

Job rotation is another potential tools to evaluate performance [44], [45] among academicians. Using job rotation as a tool will enable employees in the key position to own sufficient knowledge to qualify the positions, and further to realize the short term and long term strategic goals in HEI.

Informal Learning is defined by [46] as evaluating person in a program to determine the effectiveness of a training program towards trainees. Only one aspect of Informal Learning used in this study which is on job training [47].

On Job Training is defined as having a person learn a job by actually performing it on the job [48].It is most commonly used succession planning strategies to transfer knowledge from aging workforce to the younger employees[49] . It works as vital knowledge transfer tool,with condition if effectively

managed by the expert and the novice who is expected to complete and sign off a task completion form.

Table 1: Theoretical Model and Justification

Author	Theory/Model	Parameter	Justification of usage
[36]	Apprenticeship (CAM)	Coaching	Dominant Model for Apprenticeship
[41]	Socialization (SECI)	Mentoring Job rotation	Dominant Model for Knowledge Sharing
[46]	Informal Learning	On Job Training (OJT)	Dominant Model for evaluating training
[51]	Expertise	Novice Advanced beginner Competent Proficient Expert	Dominant Model for skill acquisition
[50]	Self-Efficacy	Cognitive Motivational Affective Selection	Dominant Model for measuring efficacy

Efficacy as according to [50] is the convictions of self-efficacy determine how individuals feel, think, motivate and act.. Such beliefs produce these diverse effects through four major processes. They are including such as cognitive, motivational, affective and selection process. Mastery experiences are the most efficient way to create a powerful efficacy. Perceived self-efficacy concerns the views of individuals in their ability to exercise control over their own function and activities affecting their life. In this study, this variable is used by evaluator to assess their efficacy towards their novice capability.

Expertise as a model was developed by [51] which was found in year of 1986 as duo collaboration [52] explained on how the level of expertise can be categorized from Novice→Advanced Beginner→Competent→Proficient→Expert with specific criteria highlighted model of adult skill acquisition. This model is widely used in many fields such nursing, dental, till leadership [53], [54] to measure the acquisition skill of apprentice. In this study, this variable is used by evaluator to assess expertise of their novice as potential ALM.

Tacit Knowledge Competence is claimed as practical intelligent [55], [56] and wisdom [57]–[59] which many said that it is a competitive advantage [60]–[68] that must have in any organizations to survive in competition. Ignorance of this

elements will be a critical weakness in an organization [9].Thus , in term of evaluating ALM potential candidate, this competence is absolutely a must to prepare them for their future roles. In this study, this variable is used by evaluator to assess expertise of their tacit knowledge competence as potential ALM based on classification by [8].

The theory and model formation used in this proposed framework and justification of their usage has been explained in Table 2.

In the next section, the Fuzzy Delphi technique is used to get weightage and ranking for MC-TKAF will be explained briefly.

2.2 Fuzzy Delphi
The fuzzy Delphi method was used for systematically gathering input from relevant experts. Expert panels were informed either face to face between the researcher and the expert, or via phone or e-mail. The objectives of study were explained to ensure that the expert understood the justification for the study, the purpose of employing fuzzy Delphi, and its methodology. Justification to use fuzzy Delphi in this study arose as the are many criteria available for TKA but there is no yet any further research is able to formulate TKA as talent performance indicators for ALM roles selection. The Likert scale is helpful in the development of a linguistic variable. The linguistic variables are then converted into triangular fuzzy numbers. Five scales of fuzzy Delphi will be used in this process as in Figure 4 instead of seven scales to simplify consensus judgement from expertise input. The adopted process as recommended by [69] will be applied for further in the section of Research Method as seen in Figure 7. Further details about how fuzzy Delphi works and how the selection of expertise in this process done for this study will be discussed in another publication.

In next section, the technique used to perform practical MC TKAF using multi criteria decision making will be explained further.

2.3 Multi Criteria Decision Making (MCDM)

Multi-criteria decision-making (MCDM) techniques address the decision-making process in various goals. A decision-maker (DM) must select from various quantifiable or non-quantifiable criteria. One of MCDM's primary objectives is to help DMs integrate objective measurements with value judgments that are not based on the view of people but on collective thoughts[70]. This technique provides powerful decision-making in areas where the best option is extremely complicated [70]. The goals are generally conflicting, so the solution depends heavily on the decision-maker's preferences and must be a compromise.

Six techniques of MCDM have been discovered as in Table 3 to solve the nature of the MC TKAF which are SAW, WPM, AHP, TOPSIS, CFPR and ELECTRE.

Figure 4: Fuzzy Delphi Scale

Table 2: MCDM Technique and Function

Technique	Function
SAW (Simple Additive Weighing)	• based on the weighted average.
WPM (Weighted Product Method)	• applicable to single-dimensional problems.
AHP (Analytical Hierarchy Process)	• problems involving multiple, often conflicting criteria.
TOPSIS (Technique for Order Preference by Similarity to Ideal Solution)	• optimal alternative being as close in distance as possible from an ideal solution and at the same time as far away as possible from a corresponding negative ideal solution.
CFPR (Consistent Fuzzy Preference Relations)	• decision making problems are based on linguistic term.
ELECTRE Fuzzy (Elimination and Choice Translating Reality – English)	• A different decision support philosophy.

Multi-Criteria Decision-Making environment exists in many areas where multiple conflicting criteria raises and needs to be evaluated. MCDM models usually consist of a finite set of options that must be ranked and decided by a decision-maker. Often a finite set of criteria needs also to be weighed by their comparative significance. This method is used to find the best solution to choose the best alternative. Each of techniques are most common in MCDM that are used in many areas of application such as banking, performance evaluation, decision making in different organization, safety assessment, multi choice general purpose problems, and etc [70] as seen in

Table 4. There are many other techniques in MCDM should be explored but for this paper, only six being discussed.

Due to many techniques in MCDM, researchers make list of criteria to choose which one is the best to be used according to area of application. For example in the study done by [71] in area of real estate and land management, they used seven(7) techniques such as (ELECTRE) , (MAUT), (ANP) , (MACBETH), (AHP) , (TOPSIS) , (PROMETHEE) and four(4) criteria's of choosing MCDM technique that is suitable for the proposed model. Another study [70]also comes with numerous of technique and criteria such fuzzy TOPSIS, fuzzy VIKOR, and fuzzy GRA for evaluation for urban mobility projects . As proposed by [70] , the best alternative technique can also use the veto rule to select. In other words, the alternative(s) that the majority of methods rank the highest will lastly be selected. The summary can be seen from Table 5.

Table 3: MCDM Techniques & Area

Areas	(SAW)	(WPM)	(AHP)	TOPSIS	(CFPR)	(ELECTRE)
Academician Selection	[72]	[74]	[74]	[74]		[74]
E Commerce professional managers Competency			[75]			
Evaluation of Wetlands Ecotourism.			[76]			
Multinational Corporation Executives Competency			[77]			
Personnel Selection Criteria					[78]	

Table 5: MCDM Criteria Selection

Author	Area	Criteria of MCDM Selection
[71]	real estate and land management	1. The weighting of variables (optional action) 2. Determining the framework of expected properties 3. Calculation of the overall index of suitability and, lastly 4. The Identification of the method best suited to resolve the decision-making problem
[70]	urban mobility projects	the alternative (s) that is ranked as the highest by the majority of techniques

The justification of MCDM technique used that is suitable for this study is also explained in Table 6. The criteria of selection is based on the technique that must support Multicriteria, Linguistic Fuzziness, and included Fuzzy Delphi process as suggested by [79] and [70]. According to [70],selection of which MCDM technique is based on the study of own scope performance, for example the method has to be chosen in such

Table 6: MCDM Justification in MC TKAF

Technique	Multi Criteria	Linguistic Fuzziness	Fuzzy Delphi Adoption
SAW	×	×	×
WPM	×	×	×
AHP	√	√	√
TOPSIS	√	√	√
CFPR	√	√	√
ELECTRE	√	√	√

a way for different problems that have to be solved . This is equivalent with [79] said that one technique outperforms the remainder, since predictive precision depends on the nature of the issue, as well as the collection and handling of information in a manner that best suits each technique and implementation. In this case, SAW and WPM seem the easiest MCDM technique which do not involve any fuzziness data for single dimensional problem. Thus, in this study only four (4) of MCDM techniques will be used as according to the nature of proposed MC TKAF.

In the next section, the research model and method that is used to perform practical MC TKAF will be explained further starting with conceptual framework, research method, and so on.

3. RESEARCH METHOD

Conceptual Framework
Five independent variables, and one Dependent variable have been chosen to be our proposed framework as illustrated in Figure 5. Related literatures for constructed indicators can be seen from Table 7. The parameter used for each indicator are based on [38] for coaching,[42] for mentoring ,[33] for Job Rotation,[47] for On Job Training,[80],[81],[82],[50] for Efficacy,[83] for Expertise and [8] for Tacit Knowledge Competence.
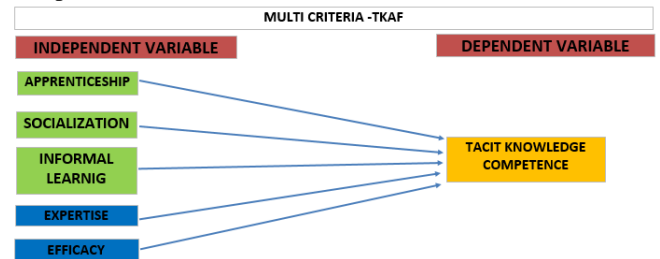

Figure 5: MC TKAF Model

Table 7: MC TKAF Proposed Element

Author	Independent Variable	Parameter
[38]	Apprenticeship	Coaching
[42]	Socialization	Mentoring
[33]		Job rotation
[47]	Informal Learning	On Job Training (OJT)
[80][81][82][50]	Efficacy	Cognitive
		Motivational
		Affective
		Selection
[83]	Expertise	Novice
		Advanced beginner
		Competent
		Proficient
		Expert
	Dependent Variable	**Parameter**
[8]	Tacit Knowledge Competence	
		Know What
		Know How
		Know Why
		Know Who

This study consists of three phases which are Phase 1,2 and 3 as illustrated in Figure 6.

Phase 1 is the phase where analyzing of the existing Tacit Knowledge Acquisition (TKA) which includes three sub phases 1: Document Analysis, 2: Validation, and 3: Fuzzy Delphi technique.

Phase 2 is the phase whereby the finding in Phase 1 in order to develop new framework of Tacit Knowledge Acquisition Framework (TKAF) that suits with HEI environment using Fuzzy Delphi to get consensus agreement.

And lastly Phase 3 is to evaluate the practicality of Tacit Knowledge Acquisition Framework (TKAF) using Multi Criteria Decision Making approach in supporting Talent Development Intervention Program

At this moment, this study is still in Phase 1 where by this paper is focusing on how the criteria for Multi TKAF is formed from sub phase 1: 1 Document Analysis and the process of selecting MCDM techniques with justification is defined in details.
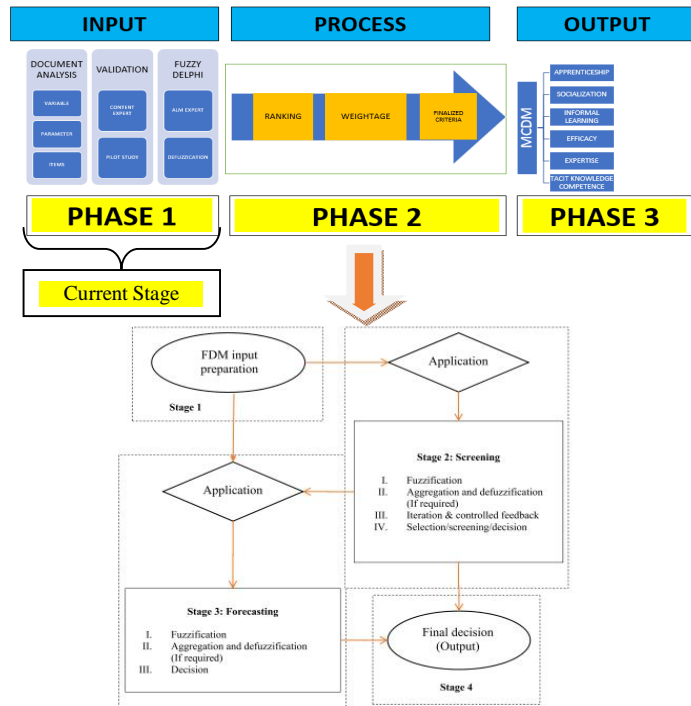

Figure 6: MC TKAF Development Process[69]

Phase 1:
1: Document Analysis
Several theories and models have been used to form the framework which are CAM, SECI, Dreyfus, Informal Learning, and Efficacy. Variable of each criterion is used from the previous literatures to support the item development.

2: Validation, and (Content Expert and Pilot Study)
This sub phase will use three content experts as suggested [84] by   to validate the instruments used and pilot study

among ALM to indicate any reliability issues.

3: Fuzzy Delphi (ALM Expert and Defuzzication)
The step of using Fuzzy Delphi will be started first where each expert's responses are converted into triangular fuzzy numbers to identify their level of agreement for each item. Next, the defuzzification method was carried out to determine the importance of the respondents ' degree of agreement. The ranking for each variable according to the experts' judgment will then ascertained through the process of defuzzication, to determine an average score of fuzzy numbers using following formula[85]:

$$X_{max} = ((X1 + X2 + X3 + Xn\ldots)/\sum X)/N = \alpha \qquad (1)$$
$$X = \text{Item} \qquad (2)$$
$$X_{max} = \text{average score of fuzzy number} \qquad (3)$$
$$N = \text{number of expert panels involved} \qquad (4)$$

4. DISCUSSION

MC-TKAF as illustrated in Figure 7 is proposed as a talent performance indicator to support Talent Development Intervention programs once the valid indicators, weightage and ranking have been verified by ALM expert during fuzzy Delphi process. MCDM technique will be used to test the suitability of each technique to ensure MC-TKAF is able to be practically used in HEI environment as talent performance indicators for potential ALM academician in HEI. Four techniques are suggested to be used in this proposed framework based on suggestions by [79] and [70] such as AHP, TOPSIS, CFPR and ELECTRE.

5. FUTURE WORK

This study is proposing a multi criteria tacit acquisition framework as talent performance indicator ,for supporting talent development intervention program in HEIs using selected MCDM technique. The criteria of Tacit Knowledge Acquisition will be used to evaluate tacit knowledge competence among academicians for the purpose to indicate performance among potential academician to fulfill the ALM roles. MCDM technique applied in MC-TKAF as proposed will be used to evaluate the initial framework and further details about the improvement made for the proposed framework after its application will be tested empirically and be discussed further in another publication.

6. CONCLUSION

In this study, our focus is to integrate MCDM into implementation of Talent Development Intervention based on TKA development criteria. This paper also highlighted previous literatures which has shown how MC TKAF is formed and the justification of MCDM technique that will be used. The Fuzzy Delphi technique is used to evaluate the proposed criteria in TKA to get suitable rank and weightage

to be used in MCDM technique. The proposed model basically is to show the selection criteria that we have, which are dedicated to support talent development intervention for ALM as talent performance indicators.

Figure 7: MC TKAF Model

REFERENCES

[1] A. Ku, B. Akmal, and M. Kamil, **Succession Planning at HEIs : Leadership Style , Career Development and Knowledge Management Practices as Its Predictors,** in *The European Proceedings of Social & Behavioural Sciences*, 2016, p. 818.

[2] M. M. Varhegyi and M. J. Denise, **Director succession planning in not-for-profit boards,** *Asia Pacific J. Hum. Resour.*, vol. 55, no. November 2015, pp. 106–126, 2017.
https://doi.org/10.1111/1744-7941.12101

[3] C. R. do Rosário, L. M. Kipper, R. Frozza, and B. B. Mariani, **Modeling of tacit knowledge in industry: Simulations on the variables of industrial processes,** *Expert Syst. Appl.*, vol. 42, no. 3, pp. 1613–1625, Feb. 2015.
https://doi.org/10.1016/j.eswa.2014.09.023

[4] F. Khalid, **The Choreography of Talent Development in Higher Education,** *High. Educ. Stud.*, vol. 9, no. 1, pp. 40–52, 2019.
https://doi.org/10.5539/hes.v9n1p40

[5] G. Scott, H. Coates, and M. Anderson, **Learning leadership in times of change: Academic Leadership Capabilities for Australian Higher Education,** no. May. 2008.

[6] P. Lanke, **Knowledge hiding: impact of interpersonal behavior and expertise,** *Hum. Resour. Manag. Int. Dig.*, vol. 26, no. 2, pp. 30–32, 2018.
https://doi.org/10.1108/HRMID-01-2018-0010

[7] I. Potgieter, J. Basson, and M. Coetzee, **Management competencies for the development of heads of department in the higher education context: a literature overview,** *South African J. Labour Relations*, vol. 35, no. 1, pp. 81–103, 2011.

[8] C. S. BĂNACU, C. BUŞU, and N. Alexandra Cătălina, **Tacit Knowledge Management – Strategic Role In Disclosing The Intellectual Capital,** in *PROCEEDINGS OF THE 7th INTERNATIONAL MANAGEMENT CONFERENCE*, 2013, pp. 491–500.

[9] F. Puteh and M. Kaliannan, **Tacit Knowledge and Employee Competency in Malaysian Service-Based Industries : A Preliminary Study,** in *Proceeding of Knowledge Management International Conference (Kmice) 2014, Vols 1 and 2*, 2014, no. August, pp. 12–15.

[10] J. C. Bol, C. Estep, M. Frank, and E. P. Mark, **The Role Of Tacit Knowledge In Auditor Expertise And Human Capital Development,** 2018.
https://doi.org/10.1111/1475-679X.12220

[11] R. Fatemeh and B. Michael, **Talent development: a systematic literature review of empirical studies,** *Eur. J. Train. Dev. Talent*, 2017.

[12] J. Matoskova *et al.*, **Facilitating Leader Tacit Knowledge Acquisition,** *J. Compet.*, vol. 5, no. 1, pp. 3–15, 2013.
https://doi.org/10.7441/joc.2013.01.01

[13] Adel Hamdan Mohammad and Nedhal Abdul Majied al Saiyd, **Guidelines for Tacit Knowledge Acquisition,** *J. Theor. Appl. Inf. Technol.*, vol. 38, no. 1, pp. 110–118, 2012.

[14] A. Garcia-perez and A. Mitra, **Tacit Knowledge Elicitation and Measurement in Research Organisations : a Methodological Approach,** vol. 5, no. 4, pp. 373–386, 2002.

[15] B. J. Richardson and F. M. Safety, **Developing Employee Expertise,** no. July, p. 5, 2017.

[16] S. N. Khera and K. Gulati, **Training Methods and Tacit Knowledge Sharing: Evidence from IT Organizations,** *Jindal J. Bus. Res.*, vol. 4, no. 1–2, pp. 11–26, 2016.
https://doi.org/10.1177/2278682116649849

[17] J. Cullens, **Leadership development as a tool for building expertise and knowledge,** *Strateg. HR Rev.*, vol. 11, no. 6, pp. 309–315, 2012.
https://doi.org/10.1108/14754391211264767

[18] A. R. Montazemi and A. Esfahanipour, **Application of Cognitive Map in Knowledge Management,** *Cogn. Informatics*, pp. 1112–1122, 2009.

[19] F. Van Winsen, Y. de Mey, L. Lauwers, S. Van Passel, M. Vancauteren, and E. Wauters, **Cognitive mapping: A method to elucidate and present**

farmers' risk perception, *Agric. Syst.*, vol. 122, pp. 42–52, 2013.

[20] H. Wassink, P. Sleegers, and J. Imants, **Cause maps and school leaders' tacit knowledge,** *J. Educ. Adm.*, vol. 41, no. 5, pp. 524–546, 2003.

[21] S. Ryan and R. V. O. Connor, **Development of a Team Measure for Tacit Knowledge in Software Development Teams,** 2004.

[22] M. Jafari, P. Akhavan, and M. Nourizadeh, **Classification of human resources based on measurement of tacit knowledge,** *J. Manag. Dev.*, vol. 32, no. 4, pp. 376–403, 2013. https://doi.org/10.1108/02621711311326374

[23] A. Afdhal and A. Ramzi, **Marketing practitioner ' s tacit knowledge acquisition using Repertory Grid Technique (RTG),** in *The 7th AIC-ICMR on Sciences and Engineering*, 2018, pp. 1–8.

[24] T. Z. Taylor *et al.*, **A Police Officer's Tacit Knowledge Inventory (POTKI): establishing construct validity and exploring applications,** *Police Pract. Res.*, vol. 14, no. 6, pp. 478–490, 2013.

[25] S. Bhattacharyya and D. Soumyaja, **Development of a Situational Judgement Inventory for Measuring Practical Intelligence of Employees in the Context of Transformational Organizational Change,** *Indore Manag. J.*, vol. 2, no. 3, pp. 8–28, 2010.

[26] N. P. Salter and S. Highhouse, **Assessing managers' common sense using situational judgment tests,** *Manag. Decis.*, vol. 47, no. 3, pp. 392–398, 2009.

[27] A. H. Church, C. R. Fleck, G. C. Foster, R. C. Levine, F. J. Lopez, and C. T. Rotolo, **Does Purpose Matter? The Stability of Personality Assessments in Organization Development and Talent Management Applications Over Time,** *J. Appl. Behav. Sci.* , vol. 52, no. 4, pp. 450–481, 2016. https://doi.org/10.1177/0021886316668748

[28] J. L. Titzer and M. R. Shirey, **Nurse manager succession planning: A concept analysis,** *Nurs. Forum*, vol. 48, no. 3, pp. 155–164, 2013.

[29] R. K. Ladyshewsky and H. Flavell, **Transfer of Training in an Academic Leadership Development Program for Program Coordinators,** *Educ. Manag. Adm. Leadersh.*, vol. 40, no. 1, pp. 127–147, 2012.

[30] R. Corwin, **Strategies to retain tacit knowledge from baby boomers,** Walden University,USA, 2015.

[31] L. Wilkes, W. Cross, D. Jackson, and J. Daly, **A repertoire of leadership attributes: An international study of deans of nursing,** *J. Nurs. Manag.*, vol. 23, no. 3, pp. 279–286, 2015. https://doi.org/10.1111/jonm.12144

[33] H. Lu and C. Yang, **Job Rotation: An Effective Tool to Transfer the Tacit Knowledge within an Enterprise,** *J. Hum. Resour. Sustain. Stud.*, vol. 03, no. 01, pp. 34–40, 2015.

[34] L. Nielsen and S. Madsen, **Storytelling as method for sharing knowledge across IT projects,** *Proc.*

Annu. Hawaii Int. Conf. Syst. Sci., vol. 8, no. C, pp. 1–9, 2006. https://doi.org/10.1109/HICSS.2006.438

[35] K. Snyder, C. Hedlund, P. Ingelsson, and I. Bäckström, **Storytelling: a co-creative process to support value-based leadership,** *Int. J. Qual. Serv. Sci.*, vol. 9, no. 3/4, pp. 484–497, 2017. https://doi.org/10.1108/IJQSS-02-2017-0009

[36] A. Collins, J. S. Brown, and A. Holum, **Cognitive apprenticeship: making thinking visible,** *Am. Educ.*, vol. 15, no. 3, pp. 6–11, 38–46, 1991.

[37] C. E. Larsen, **A Case Study Of The Cognitive Apprenticeship Model In Leadership Education,** University of Missouri-Columbia,USA, 2015.

[38] J. Odell, **An Evaluation of Coaching Effectiveness from a Psychological Perspective,** University of Manchester,United Kingdom, 2011.

[39] B. Ben-Hador, **Journal of Management Development Coaching executives as tacit performance evaluation: a multiple case study,** *J. Manag. Dev. Manag. Decis. J. Manag. Dev.*, vol. 35, no. 1, pp. 58–74, 2016.

[40] L. Cruz and L. Rosemond, **Coaching Academia: The Integration of Coaching , Educational Development , and the Culture of Higher Education,** *J. Excell. Coll. Teach.*, vol. 28, no. 4, pp. 83–108, 2017.

[41] I. Nonaka and R. Toyama, **The knowledge-creating theory revisited: knowledge creation as a synthesizing process,** *Knowl. Manag. Res. Pract.*, vol. 1, pp. 2–10, 2003.

[42] C. Pfund, A. Byars-Winston, J. Branchaw, S. Hurtado, and K. Eagan, **Defining Attributes and Metrics of Effective Research Mentoring Relationships,** *AIDS Behav.*, vol. 20, no. 2, pp. 238–248, 2016. https://doi.org/10.1007/s10461-016-1384-z

[43] E. Z. T. Mary B. Curtis, **Developmental mentoring, affective organizational commitment, and knowledge sharing in public accounting firms,** *J. Knowl. Manag.*, 2017.

[44] J. Ortega, **Job Rotation as a Learning Mechanism Job Rotation as a Learning Mechanism,** *Manag. Sci. No. 10*, vol. Vol. 47, no. March 2015, pp. 1361–1370, 2001.

[45] H. Wu, G. Tzeng, and Y. Chen, **Expert Systems with Applications A fuzzy MCDM approach for evaluating banking performance based on Balanced Scorecard,** *Expert Syst. Appl.*, vol. 36, no. 6, pp. 10135–10147, 2009. https://doi.org/10.1016/j.eswa.2009.01.005

[46] D. L. Kirkpatrick and J. D. Kirkpatrick, **Evaluating Training Methods, in** *Evaluating Training Methods*, 2009, p. 24.

[47] S. Dhliwayo, L. K. Nyanumba, and Shepherd, **An evaluation of an on the job training program at a UK based public health care company,** *Probl.*

Perspect. Manag., vol. 12, no. 2, p. 10, 2014.

[48] R. Kibigu Ajusa and W. Nyakundi Atambo, **Influence of Job Rotation on Organizational Productivity: A Case of Mount Kenya University,** *Imp. J. Interdiscip. Res. (IJIR*, vol. 2, no. 10, pp. 1358–1395, 2016.

[49] R. Ejakpomewhe, **Influence of Succession Planning on Knowledge Transfer,** Walden University,USA, 2017.

[50] A. Bandura, **Self-efficacy,** *Encycl. Hum. Behav.*, vol. 4, no. 1994, pp. 1–65, 1998.

[51] S. E. Dreyfus, **Bulletin of Science , Technology & Society The Five-Stage Model of Adult Skill Acquisition,** 2004.

[52] D. Hubert and D. Stuart, *Hubert Dreyfus and Stuart Dreyfus Mind Over Machine : The Power of Human Intuition and Expertise in the Era of the Computer (New York : The Free Press , 1986), p . 50 Table 1-1 . Five Stages of Skill Acquisition What is Moral Maturity ? A Phenomenologic.* p. 4, 1986.

[53] J. S. Osland, M. Li, and M. E. Mendenhall, **Advances in global leadership,** 2017. https://doi.org/10.1108/S1535-1203201710

[54] L. J. Lyon, **Development of teaching expertise viewed through the Dreyfus Model of Skill Acquisition,** *J. Scholarsh. Teach. Learn.*, vol. 15, no. 1, p. 88, 2014.

[55] E. C. Evans, **The Effects of Organizational Leadership and Culture on Tacit Knowledge Utilization,** 2013.

[56] P. Rosinha, **Tacit Knowledge: The way Ahead to Measured Leadership,** *Proc. 11th Eur. Conf. Manag. Leadersh. Gov. (ECMLG 2015)*, pp. 377–385, 2015.

[57] L. Zhang and Z. Han, **Analysis on the Management of College Teachers' Tacit Knowledge,** *Int. Educ. Stud.*, pp. 21–24, 2009.

[58] J. H. Moilanen, **The Wisdom of Tacit Knowing-in-Action and Mission Command,** *Adult Learn.*, vol. 26, no. 3, pp. 101–108, 2015. https://doi.org/10.1177/1045159515583258

[59] J. Choukhno and M. Klarin, **Shift from education to development: Leaders and coaches in search of shared wisdom,** *Int. J.*, vol. 4, no. 2, 2016.

[60] O. Ivona, **The Importance of Tacit Knowledge Within the Organization,** no. 1966, pp. 414–416, 2001.

[61] M. Rademakers, **Learning Corporate universities: driving force of knowledge innovation,** *J. Work. Learn. J. Manag. Dev. Iss J. Eur. Ind. Train.*, vol. 17, no. 1, pp. 130–136, 2002. https://doi.org/10.1108/13665620510574513

[62] R. Alonderiene, A. Pundziene, and K. Krišciunas, **Tacit Knowledge Acquisition and Transfer in the Process of Informal Learning,** *Probl. Perspect. Manag.*, vol. 4, pp. 134–145, 2006.

[63] S. K. Singh, **Role of leadership in knowledge management: a study,** *J. Knowl. Manag.*, vol. 12, no. 4, pp. 3–15, 2008.

[64] B. Davies and B. J. Davies, **International Journal of Educational Management Talent management in academies Talent management in academies,** *Int. J. Educ. Manag. Iss Ind. Commer. Train. Strateg. HR Rev.*, vol. 24, no. 5, pp. 418–426, 2010.

[65] Z. Khan and T. Vorley, **Big data text analytics: an enabler of knowledge management,** *J. Knowl. Manag.*, vol. 21, no. 1, pp. 18–34, 2017. https://doi.org/10.1108/JKM-06-2015-0238

[66] E. K. W. Lau, **Deploying the Measurement of Knowledge Management using the Balanced Scorecard,** in *KMO 2016*, 2016.

[67] D. Stenmark, **Leveraging Tacit Organisational Knowledge,** *J. Manag. Inf. Syst.*, vol. 17, no. 3, pp. 9–24, 2001.

[68] M. Korhonen and others, **Tacit knowledge and weak signals in organization learning: managing knowledge to create sustainable competitive advantage case Company Ltd,** 2014.

[69] N. A. M. Saffie, S. M. Amirah Nur', and K. A. Rasmani, **Fuzzy Delphi Method : Issues and Challenges,** in *2016 International Conference on Logistics, Informatics and Service Sciences (LISS)*, 2016, p. 7.

[70] M. Aruldoss, T. M. Lakshmi, and V. P. Venkatesan, **A Survey on Multi Criteria Decision Making Methods and Its Applications,** vol. 1, no. 1, pp. 31–43, 2013.

[71] M. R. Guarini, F. Battisti, and A. Chiovitti, **A methodology for the selection of multi-criteria decision analysis methods in real estate and land management processes,** *Sustain.*, vol. 10, no. 2, 2018. https://doi.org/10.3390/su10020507

[72] A. Afshari, M. Mojahed, and R. Yusuff, **Simple additive weighting approach to personnel selection problem,** *Int. J. Innov. Manag. Technol.*, vol. 1, no. 5, pp. 511–515, 2010.

[73] D. S. Kumar, S. Radhika, and K. N. S. Suman, **MADM Methods for Finding The Right Personnel in Academic Institutions,** *Int. J. u- e Serv. ,science Technol.*, vol. 6, no. 5, pp. 133–144, 2013.

[74] B. D. Rouyendegh and T. E. Erkan, **Selection of academic staff using the fuzzy Analytic Hierarchy Process (FAHP): A pilot study,** no. December 2012, 2018.

[75] C. H. Wu and W. C. Fang, **Combining the Fuzzy Analytic Hierarchy Process and the fuzzy Delphi method for developing critical competences of electronic commerce professional managers,** *Qual. Quant.*, vol. 45, no. 4, pp. 751–768, 2011. https://doi.org/10.1007/s11135-010-9425-6

[76] F. Mimi, A. Alias, and L. Abdullah, **Consistent Fuzzy Preference Relation Method and Its Application to Criteria Assessment of Quality of**

Life Among Population of Setiu Wetlands, *Discov. Math.*, vol. 39, no. 2, pp. 52–60, 2017.

[77]   W. Liu, **Application of the Fuzzy Delphi Method and the Fuzzy Analytic Hierarchy Process for the Managerial Competence of Multinational Corporation Executives,** *Int. J. e-Education,* vol. 3, no. 4, pp. 313–317, 2013.

[78]   Y. Ozdemir, K. G. Nalbant, and H. Basligil, **Evaluation of Personnel Selection Criteria Using Consistent Fuzzy Preference Relations,** *Int. J. Manag. Sci.*, vol. 4, no. 6, pp. 76–81, 2017.

[79]   A. Kolios, V. Mytilinou, E. Lozano-Minguez, and K. Salonitis, **A comparative study of multiple-criteria decision-making methods under stochastic inputs,** *Energies*, vol. 9, no. 7, pp. 1–21, 2016. https://doi.org/10.3390/en9070566

[80]   G. F. Garcia and G. Garcia, **The Relationship Between Self-Efficacy and Employee Commitment Among Perfusionists,** Walden University,USA, 2015.

[81]   G. Chen and S. M. Gully, **Validation of a New General Self-Efficacy Scale,** vol. 4, no. 1, 2001. https://doi.org/10.1177/109442810141004

[82]   S. D. Platt, **THE DEVELOPMENT OF A LEADERSHIP SELF-EFFICACY MEASURE,** AIR UNIVERSITY,Ohio,USA, 2010.

[83]   S. L. D. 2005, **Novice to Expert : the Dreyfus model of skill acquisition,** 1986.

[84]   D. F. Polit and C. T. Beck, **The Content Validity Index : Are You Sure You Know What ' s Being Reported ? Critique and Recommendations,** *ResearchinNursing&Health*, vol. 29, pp. 489–497, 2006. https://doi.org/10.1002/nur.20147

[85]   R. Dapari and H. Ismail, **Application of Fuzzy Delphi in the Selection of COPD Risk Factors among Steel Industry Workers,** vol. 16, no. 1, pp. 46–52, 2017.