Multi Criteria Tacit Knowledge Acquisition Framework (MC-TKAF) using Fuzzy Delphi Method for supporting Talent Development Intervention Program in Malaysian Higher Education Institution

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Abstract. There are certain qualities and traits needed to be qualified as Academic Leader or Academic Manager. However, there is a lack of study regarding the preparation to develop and prevent the loss of these qualities and traits among the talented academicians. Lacking of this preparation will also lead to certain Academic Leadership Management roles leave vacant without being occupied. Thus, there is a requirement to have an appropriate model to measure the knowledge, skill and experience among potential academicians during Talent Development Intervention program. This paper aims to form criteria based proposed multi criteria tacit knowledge acquisition framework using fuzzy Delphi method in phase 2 of the study. Ten (10) expertise were used to form consensus finding. Result show that elements that are evaluated by the experts with rate of consensus between 50% to 90%. This finding will enable the proposed model to be evaluated using analysis software for model fitness towards tacit knowledge competence of potential Academic Leader or Academic Manager.

1.0 Introduction

Recently, the succession planning and managing of executive transitions in the various organizations have appeared as significant problems [1] [2] including in higher education institution in Malaysia. There has been a sea change in the field of professional teaching in Malaysia, due to the lack of preparation among academicians to be academic leaders or managers (ALM) as many of junior academicians are entering this field. A few of them are truly worthy and possess various quality skills, but many of them are managing without these qualities. Thus, the management needs to take appropriate measures when recruiting and selecting a certain person to hold the post as ALM.

In the Malaysian higher education institutions (HEI), a few guidelines are established to ensure the works by the academicians are not just being evaluated for their academic performance, but also to enhance their ability and capability by offering a suitable talent development intervention program. The selection of academician personnel in HEI is the process of choosing individuals that have required qualifications to perform a defined job in the best way. A few studies [3], [4] show that, in the selection process, the academicians who are selected probably being assessed and evaluated based on

explicit assessments such as qualification, experience, and research activities. However, there is lacking of evaluation used on academician during their process of joining any talent development intervention in their institution. This paper is to propose the finding of fuzzy Delphi method which aims to validate the criteria for fulfilling the needs.

This paper introduces in the following manner, the second section elaborate on: Literature Review, third section discusses the Research Methodology, fourth section describes the Results; and the last section is Conclusion. Next section will discuss on the literatures used in this study

2.0 Literature Review

2.1. Phenomenon in Malaysia HEI selection process for ALM Roles

According to Orange Book [5], only 9% of Malaysia Public HEI academicians are considering themselves as transformational leaders. This is less than predicted numbers of expected ratio that is required in [5] which are 10-20% number of academicians should be ready to hold position as ALM. The readiness aspect towards different pathway in the study shows that the academicians and universities are not prepared for the different career pathway yet. This current phenomenon will cause a shortlisted number of potential candidates for ALM roles if there is no proactive action taken to intervene the process of selecting, developing potential candidate when it is due. The requirement to have a pool of talent to fill the gap in ALM vacancies in HEI are in need especially for performance evaluation and personnel selection. In normal practice both assessments are done separately. To do both ones requires a solid model to evaluate skill, experience and knowledge. Thus, till today, there is no yet specific model that is developed to evaluate the tacit knowledge competence which has adamant requirement among academicians to become an effective academic leader or manager. More explanations on how this model is proposed will be discussed in the next section: Multi Criteria Tacit Knowledge Acquisition Framework in section 2.2.

2.2. Multi Criteria Tacit Knowledge Acquisition Framework (MC-TKAF)

Competency is one of the required elements in evaluating potential ALM in an academic setting background such as managerial competence [6] and leadership competence [7]. However, the skill and experience can only be gained from the process of acquisition and elicitation [8] which is known as the tacit knowledge competence. In that essence of evaluating tacit knowledge competence among novices, 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 a type of evaluation that is most likely to measure the effectiveness of tacit knowledge of personnel. Five theoretical Frameworks have been chosen to be a base for our proposed framework to determine the right indicator to measure tacit knowledge acquisition among ALM candidates. There are Cognitive apprenticeship model (CAM), Socialization: SECI, Informal Learning, Self-Efficacy Theory and Dreyfus model which are defined in Table 1.The elaboration about this framework was explained in details in [8]. The next section will discuss on the method that was used to verify the criteria to evaluate proposed model by using Fuzzy Delphi Method in section 2.3.

Table 1. MC-TKAF Underlying Theory

Author	Theory/Model	Parameter
[9]	Apprenticeship (CAM)	Coaching
[10]	Socialization (SECI)	Mentoring Job rotation
[11]	Informal Learning	On Job Training (OJT)
[12]	Expertise	Novice Advanced beginner Competent Proficient Expert
[13]	Self-Efficacy	Cognitive Motivational Affective Selection

2.3. Fuzzy Delphi Method (FDM)

The idea of conventional Delphi which is quite time consuming has been given a new approach by [14] to avoid weakness such as repetitive surveys of the experts which means more costly, and the response rate becomes lower, particularly for a complicated survey. According to [14], the Fuzzy Delph Method as proposed, has advantage to reduce (1) Fuzziness, which is inescapably incorporated in the findings, (2) enables the reduction in the number of surveys, (3) The semantic structure of forecast items are clarified, and (4) Individual attributes of the expert (fore- caster) are elucidated. The improvement is made to rectify the imperfection of traditional Delphi Method (DM) that leads to low convergence in retrieving outcomes, loss of important information, and long progress of investigation[15]. Due to the flexibility of this study, the FDM has been used to be one of the tools to verify the criteria to obtain expert consensus finding. The next section will discuss the Research Methodology in section 3.

3.0 Research Methodology

This study consists of three phases such as Need Analysis, Design and Development and Model Evaluation. The main focus of this research study is to find the best candidate for academic position of ALM based on proposed framework.

Phase 1 is the Need Analysis phase in which to analyse the existing Tacit Knowledge Acquisition (TKA) that includes three sub phases 1: Document Analysis, 2: Validation, and 3: Fuzzy Delphi method. Phase 2 which is the focus of this paper is the Design and Development phase where the finding in the Phase 1 is used to develop a new framework of Tacit Knowledge Acquisition Framework (TKAF) that suits with HEI environment by using Fuzzy Delphi to get the consensus agreement. And finally, in the Phase 3 which is Model Evaluation, is to evaluate the practicality of Tacit Knowledge Acquisition Framework (TKAF) using Structural Equation Modelling (SEM PLS) and Multi Criteria Decision Making technique in supporting Talent Development Intervention Program. The next section will discuss Result in section 4. This paper only focusses on Phase 2 finding. Figure 2 shows the research methodology used in this study.

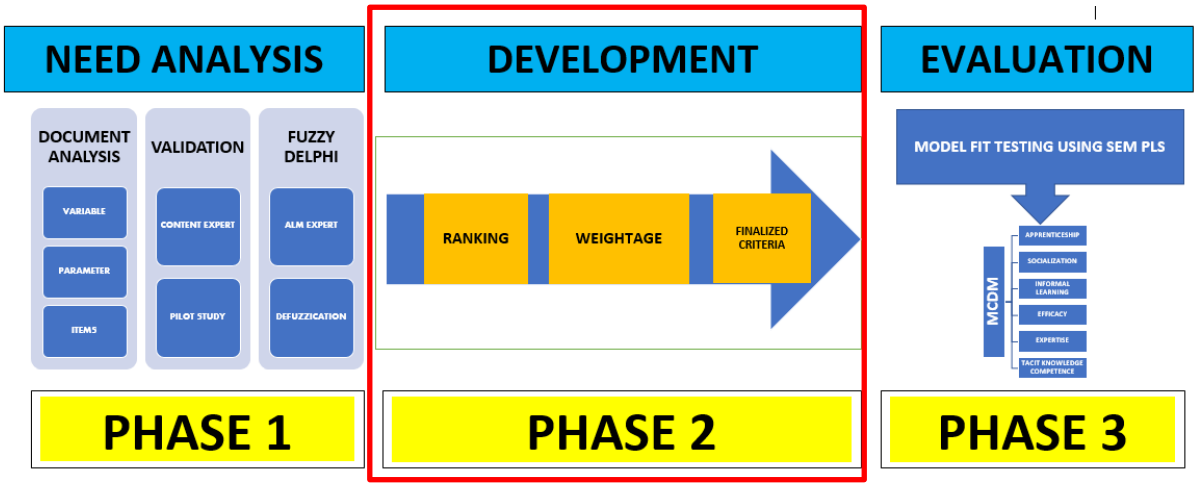

Figure 1. Research Methodology

4.0 Result

In Phase 2, Fuzzy Delphi method was used to form the consensus opinion among expert on proposed MC-TKAF.

4.1. Fuzzy Delphi Method Process

4..1.1. Expertise Selection. In this study, ten (10) scholar experts in ALM position were chosen as in Figure 3. The selection of expertise is based on how deep the expert interest towards the topic and commitment to complete the Delphi process with repetitive rounds of questionnaires [16]. The numbers of expertise involved in previous study from various fields are varied [17] [18][19][20] ranging from a minimum of 6 towards a maximum of 100 participants. Thus, the number of expertise involved in this study is sufficient according to the nature of study.

4.1.2. Number of Rounds. In this study, the number of rounds used are two round process. The process used can be seen in figure 4. The rounds will be completed after all the elements has achieved 90% above of consensus finding.

Expertise Number	Roles	Academician Experience	ALM Experience
1	DIRECTOR	31 years and above	6-10 years
2	DEAN OF FACULTY	31 years and above	21-30 years
3	DEPUTY DEAN	11-20 years	6-10 years
4	DEPUTY DEAN	11-20 years	6-10 years
5	DEPUTY DEAN	21-30 years	6-10 years
6	DEPUTY DEAN	11-20 years	Less than 5 years
7	DEPUTY DEAN	11-20 years	6-10 years
8	DEPUTY DEAN	11-20 years	6-10 years
9	DEPUTY DEAN	11-20 years	11-20 years
10	DEPUTY DEAN	11-20 years	Less than 5 years

Figure 2. Expertise Profile

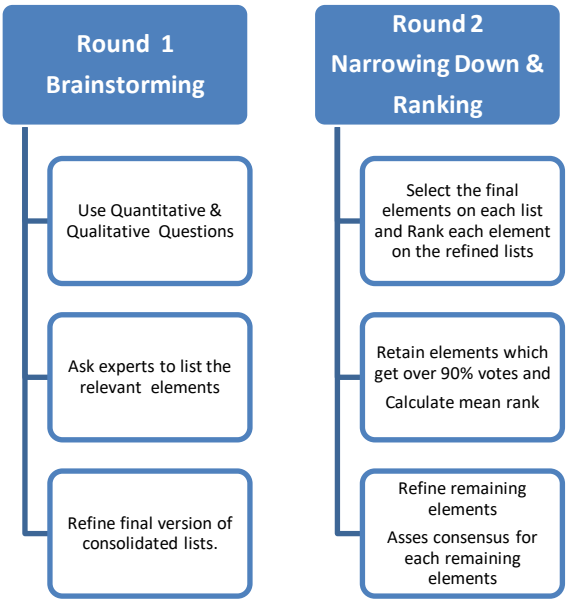

Figure 3. Number of Round in MC TKAF formation

Steps to FDM
Two main considerations in FDM, namely the Triangular Fuzzy Number and Defuzzification Process. Triangular Fuzzy Number has three values (m1, m2, m3) the minimum value, most reasonable value and the maximum value [21] as shown in Figure 5. The whole process will have four (4) steps altogether as described below:

Step 1: Collect opinions of decision group
The evaluation score of each criterion of TKAF is given by each expert using linguistic variables in the questionnaires as used in below figure 5. The scale used is based on recommendation by [14].

Step 2: Define the fuzzy numbers.
The membership function, which is based on TFN (Triangular Fuzzy Number), is selected in Fuzzy Delphi Method. The geometric averages to demonstrate the collective opinions from experts are used in Fuzzy Delphi Method.

Data Entry Direction				5 scale	
Linguistic scale	Fuzzy number			Fuzzy number	Likert
Absolutely Storngly Disagree	0.0	0.0	0.2	0.1	1
Strongly Disagree	0.0	0.2	0.4	0.2	2
Disagree	0.2	0.4	0.6	0.4	3
Average Agree	0.4	0.6	0.8	0.6	4
Agree	0.6	0.8	1.1	0.8	5

Figure 4. Scale in Fuzzy Delphi

Step 3: Defuzzification
Defuzzication is used to determine the ranking for each variable or item or each sub variable or sub item. Defuzzication =AVERAGE (Fuzzy Input Per Expert).
Use graded mean integration method [13] to defuzzify the fuzzy weight jA" of each alternate competence to definite value S, the followings are obtained: -

"d" item ==AVERAGE (Total of Fuzzy Input Per Expert)
The result can be seen from Table 3 show the "item, % item <0.2 and value for Defuzzication for each element in MC-TKAF.

Table 2. Defuzzication and "d" item value

Contruks Ranking	Constructs	"d" item	% item <0.2	Defuzzication
A1	**Mentoring**			
1	A2a	0	100%	0.8
	A2b	0	100%	0.8
2	A2c	0	100%	0.8
	A2d	0.062	90%	0.74
3	A2e	0	100%	0.8
4	A2f	0	100%	0.8
	A2g	0.021	100%	0.78
5	A2h	0	100%	0.8
	A2i	0.021	100%	0.78
6	A2g	0.021	100%	0.78
A2	**On Job Training**			
1	A4a	0.021	100%	0.78
2	A4b	0.021	100%	0.78
3	A4c	0.037	100%	0.76
4	A4d	0.092	90%	0.7
5	A4f	0.097	90%	0.66
A3	**Job Rotation**			
1	A3a	0	100%	0.8
2	A3b	0	100%	0.8
3	A3c	0.074	90%	0.72
4	A3d	0.074	90%	0.72
5	A3e	0.074	90%	0.72
A4	**Coaching**			
1	A1a	0	100%	0.8
	A1b	0.021	100%	0.78
	A1c	0.139	70%	0.4
2	A1d	0.021	100%	0.78
	A1e	0.074	90%	0.72
	A1f	0.087	90%	0.65
3	A1g	0.042	90%	0.76
	A1h	0.048	100%	0.74
	A1i	0.074	90%	0.72
B	**Efficacy**			
1	B3a	0.111	80%	0.68
	B3b	0	100%	0.8
	B3c	0.055	100%	0.26
	B3d	0	100%	0.8
	B3e	0.048	100%	0.74
	B3f	0.139	80%	0.44
2	B4a	0.113	80%	0.66
	B4b	0.021	100%	0.78
3	B1a	0.111	100%	0.68
	B1b	0.062	90%	0.74
	B1c	0.042	90%	0.76
4	B2a	0.037	100%	0.76
	B2b	0.092	90%	0.7
	B2c	0.111	80%	0.32
	B2d	0.139	100%	0.5
C	**Expertise**			
1	C1a	0	100%	0.8
	C1b	0	100%	0.8
	C1c	0	100%	0.8
	C1d	0	100%	0.8
	C1e	0	100%	0.8
2	C2a	0	100%	0.8
	C2b	0	100%	0.8
	C2c	0	100%	0.8
	C2d	0.021	100%	0.78
	C2f	0	100%	0.8
3	C3a	0	100%	0.8
	C3b	0.021	100%	0.78
	C3c	0	100%	0.8
	C3d	0	100%	0.8
	C3e	0	100%	0.8

4	C4b	0	100%	0.8
	C4c	0	100%	0.8
	C4d	0	100%	0.8
	C4e	0	100%	0.8
5	C5a	0.021	100%	0.8
	C5b	0	100%	0.8
	C5c	0	100%	0.78
	C5d	0	100%	0.8
	C5e	0	100%	0.8
D	**Tacit Knowledge Competence**			
1	D1a	0.037	100%	0.76
	D1b	0	100%	0.8
	D1c	0.073	90%	0.73
	D1d	0.074	90%	0.72
	D1e	0.092	90%	0.7
	D1f	0	100%	0.8
	D1g	0.074	90%	0.72
	D1h	0.062	90%	0.74
	D1i	0.037	100%	0.76
	D1j	0	100%	0.8
	D1k	0.021	100%	0.78
2	D3a	0.021	100%	0.8
	D3b	0.021	100%	0.78
	D3c	0.081	100%	0.78
	D3d	0.021	100%	0.7
	D3e	0.037	100%	0.78
	D3f	0	100%	0.76
	D3g	0.021	100%	0.8
	D3h	0.048	100%	0.78
	D3i	0.021	100%	0
	D3j	0.021	100%	0.78
	D3k	0	100%	0.78
	D3l	0	100%	0.8
	D3m	0	100%	0.8
	D3n	0.037	100%	0.8
	D3o	0.021	100%	0.76
	D3p	0	100%	0.78
	D3q	0	100%	0.8
3	D4a	0	100%	0.8
	D4b	0.092	80%	0.6
	D4c	0.29	50%	0.8
	D4d	0.3	50%	0.78
4	D2a	0	100%	0
	D2b	0.021	100%	0.8
	D2c	0	100%	0.78
	D2d	0	100%	0.8
	D2e	0.037	100%	0.8
	D2f	0.074	90%	0.76
	D2g	0.037	90%	0.72
	D2h	0.074	90%	0.76
	D2i	0	100%	0.72
	D2j	0	100%	0.8

The formula to calculate Average “d” threshold and Average Consensus as following: -
Average "d" Threshold: =AVERAGE (Output of Defuzzication)
% calculation Formula = number of < 0.2 item x 100 / 10 experts
Formula to get consensus average = (= AVERAGE (input/number of expert))
The final result can be seen from Table 4 show the total value of Average “d” threshold and Average Consensus which show all elements proposed is widely accepted by experts.

Table 3. Average "d" Threshold and Average Consensus

		Average "d" Threshold	**Average Consensus**
A1	**Mentoring**	0.012	99%
A2	**On Job Training**	0.054	96%
A3	**Job Rotation**	0.044	94%
A4	**Coaching**	0.056	92%
B	**Efficacy**	0.072	93%
C	**Expertise**	0.002	100%
D	**Tacit Knowledge Competence**	0.042	95%

Step 4: Select the criteria evaluation
Finally, the proper criteria can be screened out from numerous criteria by setting the threshold α . The principle of screening is as follows: If S j $\alpha\geq$, then j criteria is selected; otherwise, the criteria should be deleted. The final result of Fuzzy Delphi Method can be seen in Table 5. In this study, 10 expert scholars were invited to review the Questionnaire contents and based on their assessment, any inappropriate items were eliminated. A fusion fuzzy Delphi questionnaire was proposed in this study as shown in Appendix A.

Table 4. The final result of Fuzzy Delphi Method

Contrucs Ranking	Constructs	Item Ranking	Status
A1	**Mentoring**		
1	A2a	1	ACCEPTED
	A2b	2	ACCEPTED
2	A2c	3	ACCEPTED
	A2d	10	ACCEPTED
3	A2e	4	ACCEPTED
4	A2f	5	ACCEPTED
	A2g	8	ACCEPTED
5	A2h	6	ACCEPTED
	A2i	9	ACCEPTED
6	A2g	7	ACCEPTED
A2	**On Job Training**		
1	A4a	1	ACCEPTED
2	A4b	2	ACCEPTED
3	A4c	3	ACCEPTED
4	A4d	4	ACCEPTED
5	A4f	5	ACCEPTED
A3	**Job Rotation**		
1	A3a	1	ACCEPTED
2	A3b	2	ACCEPTED
3	A3c	3	ACCEPTED
4	A3d	4	ACCEPTED
5	A3e	5	ACCEPTED
A4	**Coaching**		
1	A1a	1	ACCEPTED
	A1b	2	ACCEPTED
	A1c	9	ACCEPTED
2	A1d	3	ACCEPTED
	A1e	7	ACCEPTED
	A1f	8	ACCEPTED
3	A1g	4	ACCEPTED
	A1h	5	ACCEPTED
	A1i	6	ACCEPTED
B	**Efficacy**		
1	B3a	10	ACCEPTED
	B3b	1	ACCEPTED
	B3c	15	ACCEPTED
	B3d	2	ACCEPTED
	B3e	7	ACCEPTED
	B3f	13	ACCEPTED
2	B4a	11	ACCEPTED
	B4b	3	ACCEPTED
3	B1a	9	ACCEPTED
	B1b	6	ACCEPTED
	B1c	4	ACCEPTED
4	B2a	5	ACCEPTED
	B2b	8	ACCEPTED
	B2c	14	ACCEPTED
	B2d	12	ACCEPTED
C	**Expertise**		
1	C1a	1	ACCEPTED
	C1b	2	ACCEPTED
	C1c	3	ACCEPTED
	C1d	4	ACCEPTED
	C1e	5	ACCEPTED
2	C2a	6	ACCEPTED
	C2b	7	ACCEPTED
	C2c	8	ACCEPTED
	C2d	25	ACCEPTED
	C2f	9	ACCEPTED
3	C3a	10	ACCEPTED
	C3b	24	ACCEPTED
	C3c	11	ACCEPTED
	C3d	12	ACCEPTED
	C3e	13	ACCEPTED
4	C4b	15	ACCEPTED
	C4c	16	ACCEPTED
	C4d	17	ACCEPTED
	C4e	18	ACCEPTED
5	C5a	19	ACCEPTED
	C5b	20	ACCEPTED
	C5c	23	ACCEPTED
	C5d	21	ACCEPTED
	C5e	22	ACCEPTED
D	**Tacit Knowledge Competence**		
1	D1a	26	ACCEPTED
	D1b	1	ACCEPTED
	D1c	32	ACCEPTED
	D1d	33	ACCEPTED
	D1e	37	ACCEPTED
	D1f	2	ACCEPTED
	D1g	34	ACCEPTED
	D1h	31	ACCEPTED
	D1i	27	ACCEPTED
	D1j	3	ACCEPTED
	D1k	16	ACCEPTED
2	D3a	8	ACCEPTED
	D3b	18	ACCEPTED
	D3c	19	ACCEPTED
	D3d	39	ACCEPTED
	D3e	20	ACCEPTED
	D3f	30	ACCEPTED
	D3g	9	ACCEPTED
	D3h	21	ACCEPTED
	D3i	41	ACCEPTED
	D3j	22	ACCEPTED
	D3k	23	ACCEPTED
	D3l	10	ACCEPTED
	D3m	11	ACCEPTED
	D3n	12	ACCEPTED
	D3o	31	ACCEPTED
	D3p	24	ACCEPTED
	D3q	13	ACCEPTED
3	D4a	14	ACCEPTED
	D4b	39	ACCEPTED
	D4c	15	ACCEPTED
	D4d	25	ACCEPTED
4	D2a	40	ACCEPTED
	D2b	4	ACCEPTED
	D2c	17	ACCEPTED

	D2d	5	ACCEPTED
	D2e	6	ACCEPTED
	D2f	28	ACCEPTED

	D2g	35	ACCEPTED
	D2h	29	ACCEPTED
	D2i	36	ACCEPTED

	D2j	7	ACCEPTED

5.0 Conclusion

The decision makers among ALM are always facing complex environment to assign a candidate for their roles. The current approach of performance and personnel selection in HEI are based on the assumptions and some contain uncertainties. Talent Development Intervention program is an important interpersonal catalyst to create an effective process for recognizing, developing, and retaining top to down leadership and management. In this paper, by using fuzzy Delphi method, the majority of experts agreed with the constructs and elements that have been listed with average of consensus between 50%-99%. The aim of this study is to provide an adequate criterion using Multi criteria tacit knowledge acquisition framework for academic position selection in HEI. The finding in this paper will be used to construct the element for validation of model fitness test. Later the validated model will be incorporated with MCDM techniques such as AHP, TOPSIS, ELECTRE and CFPR technique.

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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 Journal of Human Resources*, vol. **55**, no. November 2015, pp. 106–126, 2017.

[3] J. Matoskova *et al.*, 'Facilitating Leader Tacit Knowledge Acquisition', *Journal of Competitiveness*, vol. **5**, no. 1, pp. 3–15, 2013.

[4] F. Khalid, 'The Choreography of Talent Development in Higher Education', *Higher Education Studies*, vol. **9**, no. 1, pp. 40–52, 2019.

[5] Ministry of Education Malaysia (MoE), *University Tranformation Programme,Orange Book : Strenghening Academy Career Pathways and Leadership Development*, 2016th ed. 2016.

[6] 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 Journal of Labour Relations*, vol. **35**, no. 1, pp. 81–103, 2011.

[7] G. Scott, H. Coates, and M. Anderson, 'Learning leadership in times of change: Academic Leadership Capabilities for Australian Higher Education', in *Higher Education Research*, The Carrick Institute for Learning and Teaching in Higher Education Ltd, 2008, p. 173.

[8] Y. H. H. M. Yusof, A. A. Ruzaini, and R. Awanis, 'Development of Multi Criteria Tacit Knowledge Acquisition Framework (MC-TKAF) to Support Talent Development Intervention Program in A Malaysian Comprehensive University', *International Journal of Advanced Trends in Computer Science and Engineering*, vol. **8**, no. 1.4, pp. 490–500, 2019.

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

[10] I. Nonaka and R. Toyama, 'The knowledge-creating theory revisited: knowledge creation as a synthesizing process', *Knowledge Management Research & Practice*, vol. **1**, pp. 2–10, 2003.

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

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

[13] A. Bandura, 'Self-efficacy', *Encyclopedia of human behavior*, vol. **4**, no. 1994, pp. 1–65, 1998.

[14] A. Ishikawa, M. Amagasa, T. Shiga, G. Tomizawa, R. Tatsuta, and H. Mieno, 'The max-min Delphi method and fuzzy Delphi method via fuzzy integration', *Fuzzy Sets and Systems*, vol. **55**, no. 3, pp. 241–253, 1993.
[15] 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.
[16] F. Hasson, S. Keeney, and H. McKenna, 'Research guidelines for the Delphi survey technique', *Journal of Advanced Nursing*, vol. **32**, no. 4, pp. 1008–1015, 2000.
[17] O. J. Olaniran, 'Barriers to Tacit Knowledge Sharing in Geographically Dispersed Project Teams in Oil and Gas Projects', vol. **48**, no. 3, pp. 41–57, 2017.
[18] R. Elkington and A. Upward, 'Leadership as Enabling Function for Flourishing by Design', *Journal of Global Responsibility*, vol. **7**, pp. 1–21, 2016.
[19] T. E. Kurtz, 'Approaches for Developing a Model for Information and Communication Technology (ICT) Implementation in the Higher Education Environment by', 2015.
[20] S. Ohnmacht, 'Integrated Talent Management In Health Care: A Delphi Study', 2015.
[21] N. Alias, F. Rosman, M. Nazri, A. Rahman, and D. Dewitt, 'The potential of video game in Malay language learning for foreign students in a public higher education institution', *Procedia - Social and Behavioral Sciences*, vol. **176**, pp. 1020–1027, 2015.

Appendices

Table 5 Acquisition

A1: Coaching Outcome Scale		
		Items
A1a	Performance	the candidate is able to perform task with his/her own self-confidence
A1b	Performance	the candidate is able to show proactive action in doing task
A1c	Performance	the candidate is able to take more challenging works
A1d	Organisational Commitment	the candidate is able to have confidence to move on with organization
A1e	Organisational Commitment	the candidate is able to show fully desire to accept the company goals and values as his/her own
A1f	Organisational Commitment	the candidate feels that he/she has to stay with the company because the costs of leaving are too great
A1g	Organisational Citizenship Behaviour	the candidate is more competent to deal with others
A1h	Organisational Citizenship Behaviour	the candidate obeys the company rules and regulations even when no one is watching
A1i	Organisational Citizenship Behaviour	the candidate is able to have more confidence with senior staff
A2 : Mentoring Outcome Scale		
		Items
A2a	Professional development	the candidate is able to identify opportunities to develop the professional skills needed to become a successful academic leader/manager
A2b	Professional development	the candidate is able to engage in any opportunities to develop the professional skills needed to become a successful academic leader/manager
A2c	Professional networks	the candidate is able to actively identify to meet and establish relationships with potential future colleagues in the discipline
A2d	Professional networks	the candidate is able to actively seek ways to meet and establish relationships with potential future colleagues in the discipline
A2e	Culturally responsive	the candidate is able to Out comely negotiate the dialogue across diverse dimension
A2f	Sense of belonging	the candidate is able to actively engage and establish relationships with his/her team members
A2g	Mentor and mentee expectations	the candidate is able to communicate mutual expectations for the mentoring relationship
A2h	Mentor and mentee expectations	the candidate is able to establish mutual expectations for the mentoring relationship
A2i	Mentee ALM self-efficacy	the candidate is able to seek any opportunities to explore for a career of academic leader/manager

A2g	Mentee ALM self-efficacy	the candidate is able to seek any opportunities to prepare for a career of academic leader/manager
A3: Job Rotation Outcome Scale		
		Items
A3a	knowledge type	the candidate is able to distinguish the type of knowledge that they should acquire from the process
A3b	knowledge distance	the candidate is able to evaluate his/her current performance and previous performance
A3c	Motivation	the candidate is able to find source of inspiration to stay motivated
A3d	Social Communication	the candidate is able to establish good communication skill during the process
A3e	Productivity	the candidate is able to produce more productive jobs than before the process
A4:On Job Training Outcome Scale		
		Items
A4a	Reaction	the candidate is able to identify the structures, contents and the methods employed during his/her training into the real job experience
A4b	Learning	the candidate is able to practise knowledge that he/she gained from the training
A4c	Behavior	the candidate is able to demonstrate knowledge, skills and competencies gained from the training session at the work place
A4d	Behavior	the candidate is able to apply knowledge, skills and competencies gained from the training session at the work place
A4f	Results	the candidate is able to assess the impacts of the training to their job performance

Table 6 A5: Efficacy

		Items
B1a	Cognitive Processes	the candidate views the challenging problems as tasks to be mastered
B1b	Cognitive Processes	the candidate develops deeper interest in the activities in which the candidate participates with
B1c	Cognitive Processes	the candidate forms a stronger sense of commitment to their interest and activities
B2a	Motivational Processes	When facing difficult tasks, the candidate is certain that the candidate will accomplish them.
B2b	Motivational Processes	the candidate is confident that the he/she can perform effectively on many different tasks.
B2c	Motivational Processes	If something looks too complicated, the candidate will not even bother to try it
B2d	Motivational Processes	Even when the things are tough, the candidate can perform quite well.
B3a	Affective Processes	the candidate feels insecure about his/her ability to do things
B3b	Affective Processes	the candidate keeps trying even when the things seem difficult
B3c	Affective Processes	the candidate remains calm even in the chaos
B3d	Affective Processes	the candidate tends to focus on their progress rather than getting overwhelmed with the success
B3e	Affective Processes	the candidate believes that the hard work will be eventually paid off
B3f	Affective Processes	the candidate avoids the situations that he/she believes exceed his/her coping capabilities
B4a	Selection Processes	the candidate readily undertakes challenging activities that he/she judges himself/ herself is capable of handling
B4b	Selection Processes	the candidate selects the choices that he/she makes to cultivate different competencies, interests and social networks that determine the life courses

Table 7 Expertise

		Items
C1a	Novice	the candidate does have minimal or textbook knowledge without connecting it to practice
C1b	Novice	the candidate does unlikely that satisfactory performance is attained unless closely supervised
C1c	Novice	the candidate does Needs close supervision or instruction
C1d	Novice	the candidate does little or no conception of dealing with complexity
C1e	Novice	the candidate does Tends to see actions in isolation
C2a	Advanced beginner	the candidate does Working knowledge of key aspects of practice
C2b	Advanced beginner	the candidate does straightforward tasks likely to be completed to an acceptable standard
C2c	Advanced beginner	the candidate does Able to achieve some steps using own judgement, but supervision needed for overall task

C2d	Advanced beginner	the candidate does Appreciates complex situations but only able to achieve partial resolution
C2f	Advanced beginner	the candidate does Sees actions as a series of steps
C3a	Competent	the candidate does Good working and background knowledge of practice
C3b	Competent	the candidate does Useful results are reached also for open tasks, though may lack refinement
C3c	Competent	the candidate does Able to achieve most tasks using own judgement
C3d	Competent	the candidate does Copes with complex situations through deliberate analysis and planning
C3e	Competent	the candidate does Identifies actions at least partly in terms of longer-term interrelations
C4a	Proficient	the candidate does Deep understanding of technical field and area of practice
C4b	Proficient	the candidate does Immaculate standard is achieved routinely for open tasks
C4c	Proficient	the candidate does Able to take full responsibility for own work (and that of others if applicable)
C4d	Proficient	the candidate does Deals with complex situations holistically, certain decision-making
C4e	Proficient	the candidate does Sees overall picture and how individual actions fit within it
C5a	Expert	the candidate does Authoritative knowledge of technical field and deep tacit understanding across area of practice
C5b	Expert	the candidate achieves excellent results for open tasks with relative ease
C5c	Expert	the candidate able to take responsibility for going beyond existing standards and creating own interpretations
C5d	Expert	the candidate does holistic grasp of complex situations, moves between intuitive and analytical approaches with ease, can structure open problems
C5e	Expert	the candidate sees overall picture and alternative approaches, has a vision of what may be possible

Table 8 Tacit Knowledge Competence

		Items
D1a	Know What	the candidate do have financial experience
D1b	Know What	the candidate do have management experience,
D1c	Know What	the candidate realizes that it is okay to not have all the answers for management and leadership issues.
D1d	Know What	the candidate has tech-savvy skill.
D1e	Know What	the candidate has historical undocumented information about organization
D1f	Know What	the candidate has people management skills
D1g	Know What	the candidate has ability to dealing with personnel issues.
D1h	Know What	the candidate can handle privacy issues; such as privacy and confidential mindset.
D1i	Know What	the candidate understands organizational politic
D1j	Know What	the candidate has communication skills.
D1k	Know What	the candidate has leadership skills
D2a	Know How	the candidate knows the work-arounds.
D2b	Know How	the candidate has administrative competency.
D2c	Know How	the candidate knows how to facilitate meetings.
D2d	Know How	the candidate knows how to manage project
D2e	Know How	the candidate has specific experience and explicit knowledge to ALM.
D2f	Know How	the candidate is not afraid of how others would perceive them.
D2g	Know How	the candidate knows how to inspire others.
D2h	Know How	the candidate knows how to train others.
D2i	Know How	the candidate knows how to instruct others.
D2j	Know How	the candidate knows how to lead others.
D3a	Know Why	the candidate has critical thinking skills.
D3b	Know Why	the candidate can develop work arounds.
D3c	Know Why	the candidate knows how to bend the rules without actually breaking them.
D3d	Know Why	the candidate knows how to incorporate the strategic plan into decisions.
D3e	Know Why	the candidate knows how to deal with upper management.
D3f	Know Why	the candidate knows how to feel comfortable while reaching out to other departments/collaborating.

D3g	Know Why	the candidate is able to recognize, generate, and manipulate the data needed for organization
D3h	Know Why	the candidate has observations skill that becomes ingrained in mindset
D3i	Know Why	the candidate has common sense in dealing management and leadership issues
D3j	Know Why	the candidate has intuition in making decision.
D3k	Know Why	the candidate has emotional intelligence and understand to use it well.
D3l	Know Why	the candidate understands the culture of organization
D3m	Know Why	the candidate possesses confidence
D3n	Know Why	the candidate possesses assertiveness
D3o	Know Why	the candidate has credibility of academic excellence.
D3p	Know Why	the candidate has credibility of being an insider.
D3q	Know Why	the candidate is able to think quick on feet
D4a	Know Who	the candidate knows who to go to when facing any issue in management and leadership.
D4b	Know Who	the candidate has direct working experience with university top management such as vice chancellor, dean, rector and etc
D4c	Know Who	the candidate realizes the importance of reaching out to other departments/collaborating
D4d	Know Who	the candidate has successful ways to communicate with management.