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 academicians 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            | Competent, Proficient Expert                 |
| [13]    | Self-Efficacy        | Cognitive, Motivational, Affective, Selection|

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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 Delphi 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 (forecaster) 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.

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

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.
Step 3: Defuzzification

Defuzzification is used to determine the ranking for each variable or item or each sub variable or sub item. Defuzzification = 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. Defuzzification and “d” item value

| Controls | Rankings | Constructs | “d” item | % item <0.2 | Defuzzification |
|----------|----------|------------|----------|--------------|----------------|
| A1       |          | Mentoring  |          |              |                |
|          | A1a      | 0          | 100%     | 0.8          |                |
|          | A1b      | 0.021      | 100%     | 0.78         |                |
|          | A1c      | 0.139      | 70%      | 0.4          |                |
|          | A1d      | 0.021      | 100%     | 0.78         |                |
|          | A1e      | 0.074      | 90%      | 0.72         |                |
|          | A1f      | 0.048      | 100%     | 0.74         |                |
|          | A1i      | 0.074      | 90%      | 0.72         |                |
| A2       |          | On Job Training | | | |
|          | A2a      | 0          | 100%     | 0.8          |                |
|          | A2b      | 0.021      | 100%     | 0.78         |                |
|          | A2c      | 0          | 100%     | 0.8          |                |
|          | A2d      | 0.062      | 90%      | 0.74         |                |
|          | A2e      | 0.074      | 90%      | 0.72         |                |
|          | A2f      | 0          | 100%     | 0.8          |                |
|          | A2g      | 0.021      | 100%     | 0.78         |                |
|          | A2h      | 0          | 100%     | 0.8          |                |
|          | A2i      | 0.021      | 100%     | 0.78         |                |
|          | A2j      | 0.021      | 100%     | 0.78         |                |
| A3       |          | Job Rotation | | | |
|          | A3a      | 0          | 100%     | 0.8          |                |

A4

A4

| Constructs | Rankings | Coaching | “d” item | % item <0.2 | Defuzzification |
|------------|----------|----------|----------|--------------|----------------|
| A4a        | 0        | 100%     | 0.8      |              |                |
| A4b        | 0.021    | 100%     | 0.78     |              |                |
| A4c        | 0.139    | 70%      | 0.4      |              |                |
| A4d        | 0.021    | 100%     | 0.78     |              |                |
| A4e        | 0.074    | 90%      | 0.72     |              |                |
| A4f        | 0.048    | 100%     | 0.74     |              |                |
| A4g        | 0.074    | 90%      | 0.72     |              |                |

B

| Constructs | Rankings | Efficacy | “d” item | % item <0.2 | Defuzzification |
|------------|----------|----------|----------|--------------|----------------|
| B1a        | 0.111    | 80%      | 0.68     |              |                |
| B1b        | 0.062    | 90%      | 0.74     |              |                |
| B1c        | 0.042    | 90%      | 0.76     |              |                |
| 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

| Constructs | Rankings | Expertise | “d” item | % item <0.2 | Defuzzification |
|------------|----------|-----------|----------|--------------|----------------|
| 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      |              |                |
| C2a        | 0        | 100%      | 0.8      |              |                |
| C2b        | 0        | 100%      | 0.8      |              |                |
| C2c        | 0        | 100%      | 0.8      |              |                |
| C2d        | 0.021    | 100%     | 0.78     |              |                |
| C2e        | 0        | 100%      | 0.8      |              |                |
| 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      |              |                |
The formula to calculate Average “d” threshold and Average Consensus as following:

- Average "d" Threshold: \(=\text{AVERAGE (Output of Defuzzication)}\)
- % 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**

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

*Step 4: Select the criteria evaluation*

Finally, the proper criteria can be screened out from numerous criteria by setting the threshold \(\alpha\). The principle of screening is as follows: If \(S_j \geq \alpha\), 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

| Constructs | Item | Rating | Status |
|------------|------|--------|--------|
| A1 Mentoring | 1 | A2a | 1 | ACCEPTED |
| | 2 | A2b | 2 | ACCEPTED |
| | 3 | A2c | 3 | ACCEPTED |
| | 10 | A2d | 10 | ACCEPTED |
| | 4 | A2e | 4 | ACCEPTED |
| | 5 | A2f | 5 | ACCEPTED |
| | 8 | A2g | 8 | ACCEPTED |
| | 6 | A2h | 6 | ACCEPTED |
| | 9 | A2i | 9 | ACCEPTED |
| | 7 | 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 |
| | 2 | A1b | 2 | ACCEPTED |
| | 9 | A1c | 9 | ACCEPTED |
| | 3 | A1d | 3 | ACCEPTED |
| | 7 | A1e | 7 | ACCEPTED |
| | 8 | A1f | 8 | ACCEPTED |
| | 4 | A1g | 4 | ACCEPTED |
| | 5 | A1h | 5 | ACCEPTED |
| | 6 | A1i | 6 | ACCEPTED |

| Constructs | Item | Rating | Status |
|------------|------|--------|--------|
| B Efficacy | 10 | B3a | 10 | ACCEPTED |
| | 1 | B3b | 1 | ACCEPTED |
| | 15 | B3c | 15 | ACCEPTED |
| | 2 | B3d | 2 | ACCEPTED |
| | 7 | B3e | 7 | ACCEPTED |
| | 13 | B3f | 13 | ACCEPTED |
| | 11 | B4a | 11 | ACCEPTED |
| | 3 | B4b | 3 | ACCEPTED |
| | 9 | B1a | 9 | ACCEPTED |
| | 6 | B1b | 6 | ACCEPTED |
| | 4 | B1c | 4 | ACCEPTED |
| | 5 | B2a | 5 | ACCEPTED |
| | 8 | B2b | 8 | ACCEPTED |
| | 14 | B2c | 14 | ACCEPTED |
| | 12 | B2d | 12 | ACCEPTED |
| | 1 | C1a | 1 | ACCEPTED |
| | 2 | C1b | 2 | ACCEPTED |
| | 3 | C1c | 3 | ACCEPTED |
| | 4 | C1d | 4 | ACCEPTED |
| | 5 | C1e | 5 | ACCEPTED |
| | 6 | C2a | 6 | ACCEPTED |
| | 7 | C2b | 7 | ACCEPTED |
| | 8 | C2c | 8 | ACCEPTED |
| | 25 | C2d | 25 | ACCEPTED |
| | 9 | C2f | 9 | ACCEPTED |
| | 10 | C3a | 10 | ACCEPTED |
| | 24 | C3b | 24 | ACCEPTED |
| | 11 | C3c | 11 | ACCEPTED |
| | 12 | C3d | 12 | ACCEPTED |
| | 13 | C3e | 13 | ACCEPTED |
| | 15 | C4b | 15 | ACCEPTED |
| | 16 | C4c | 16 | ACCEPTED |
| | 17 | C4d | 17 | ACCEPTED |
| | 18 | C4e | 18 | ACCEPTED |
| | 19 | C5a | 19 | ACCEPTED |
| | 20 | C5b | 20 | ACCEPTED |
| | 23 | C5c | 23 | ACCEPTED |
| | 21 | C5d | 21 | ACCEPTED |
| | 22 | C5e | 22 | ACCEPTED |
| | 26 | D1a | 26 | ACCEPTED |
| | 1 | D1b | 1 | ACCEPTED |
| | 32 | D1c | 32 | ACCEPTED |
| | 33 | D1d | 33 | ACCEPTED |
| | 37 | D1e | 37 | ACCEPTED |
| | 2 | D1f | 2 | ACCEPTED |
| | 34 | D1g | 34 | ACCEPTED |
| | 31 | D1h | 31 | ACCEPTED |
| | 27 | D1i | 27 | ACCEPTED |
| | 3 | D1j | 3 | ACCEPTED |
| | 16 | D1k | 16 | ACCEPTED |
| | 8 | D3a | 8 | ACCEPTED |
| | 18 | D3b | 18 | ACCEPTED |
| | 19 | D3c | 19 | ACCEPTED |
| | 39 | D3d | 39 | ACCEPTED |
| | 20 | D3e | 20 | ACCEPTED |
| | 30 | D3f | 30 | ACCEPTED |
| | 9 | D3g | 9 | ACCEPTED |
| | 21 | D3h | 21 | ACCEPTED |
| | 41 | D3i | 41 | ACCEPTED |
| | 22 | D3j | 22 | ACCEPTED |
| | 23 | D3k | 23 | ACCEPTED |
| | 10 | D3l | 10 | ACCEPTED |
| | 11 | D3m | 11 | ACCEPTED |
| | 12 | D3n | 12 | ACCEPTED |
| | 31 | D3o | 31 | ACCEPTED |
| | 24 | D3p | 24 | ACCEPTED |
| | 13 | D3q | 13 | ACCEPTED |
| | 14 | D4a | 14 | ACCEPTED |
| | 39 | D4b | 39 | ACCEPTED |
| | 15 | D4c | 15 | ACCEPTED |
| | 25 | D4d | 25 | ACCEPTED |
| | 40 | D4e | 40 | ACCEPTED |
| | 4 | D2a | 4 | ACCEPTED |
| | 17 | D2c | 17 | 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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**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 is able to Out comely negotiate the dialogue across diverse dimension |
| 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 unlike likely 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 |
| Level | Description | Examples |
|-------|-------------|----------|
| C2b | Advanced beginner | the candidate does Appreciates complex situations but only able to achieve partial resolution |
| C2c | Advanced beginner | the candidate does Sees actions as a series of steps |
| C2d | Competent | the candidate does Good working and background knowledge of practice |
| C2e | Competent | the candidate does Useful results are reached also for open tasks, though may lack refinement |
| C2f | Competent | the candidate does Able to achieve most tasks using own judgement |
| C3a | Competent | the candidate does Identifies actions at least partly in terms of longer-term interrelations |
| C3b | Competent | the candidate does Sees actions as a series of steps |
| C3c | Competent | the candidate does Able to achieve most tasks using own judgement |
| C3d | Competent | the candidate does Deals with complex situations holistically, certain decision-making |
| C3e | Competent | the candidate does Authorized knowledge of technical field and deep tacit understanding across area of practice |
| C4a | Proficient | the candidate does Deep understanding of technical field and area of practice |
| C4b | Proficient | the candidate does Able to take full responsibility for own work (and that of others if applicable) |
| C4c | Proficient | the candidate does Deals with complex situations holistically, certain decision-making |
| C4d | Proficient | the candidate does Immaculate standard is achieved routinely for open tasks |
| C5a | Proficient | the candidate does Authoritative knowledge of technical field and deep tacit understanding across area of practice |
| C5b | Proficient | the candidate does Need not for going beyond existing standards and creating own interpretations |
| C5c | Expert | the candidate does Holistic grasp of complex situations, moves between intuitive and analytical approaches with ease, can structure open problems |
| C5d | Expert | the candidate does Sees overall picture and alternative approaches, has a vision of what may be possible |
| C5e | Expert | the candidate has leadership skills |

Table 8 Tacit Knowledge Competence
| 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. |