Addressing Competency Gaps for Vocational Instructor through Competency Modelling

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Abstract
The purpose of this paper is to comprehend the competency and competency models at workplace settings, its significance to human resource development in terms of knowledge, skills and abilities. In the management literature, the competency based approach has grown through McClelland (1973) seminal paper "testing for competencies rather than intelligence" as to argue the traditional approach to measure performance using aptitude and content test. Evidence had also indicated that competency can lead to effective job performance. The practice of competency base approach has resulted with the expansion of term, models of specific profession also the application. This paper discusses the previous competency literature with greater interest on the field of competency, competency models and technical vocational education and training in Malaysia specific for vocational teaching profession. This study suggests that competency modelling can contribute to the effectiveness of vocational teacher education and to address competency gaps issues. Competency modelling for vocational teaching is still is in its infancy however the lack of competent teachers is a challenge for Malaysia to reach a better income levels in future.
Keywords: Technical Vocational Education and Training, Competency gaps, Competency model of Vocational College Teacher, Effective Job Performance, Human Resource Development

1.0   Introduction
Technical vocational education and training (TVET) has been strategized as the main platform to supply enough skilled workforces to reach a high-income nation in 2020. In the period of 10th Malaysian plan (2010 – 2015), serious effort has been implement by the Malaysian government and related agencies including mainstreaming and broadening

access to quality TVET to increase the number of skilled workers (Economic Planning Unit, 2010). Thus, it has resulted with the conversion of 72 vocational schools plus eight technical schools to vocational colleges and established another eight new colleges (Rasul et al., 2015). For the next 5 years (2016 -2020), in the era of globalisation and technology advances, transforming the education system is becoming a game changer in catering to the high demand of the industry. The main plan is to alter the TVET delivery system and turn it into one of the potentials for future education pathway (Economic Planning Unit & Prime Minister's Department, 2015). Despites the initiative to successfully mainstream TVET, four issues and challenges has been highlighted and addressed which includes the uncoordinated governance, fragmented delivery, lack of recognition for technologists and competency gaps among instructors (Economic Planning Unit & Prime Minister's Department, 2015; Leong, 2011), as summarised and presented in figure 1;
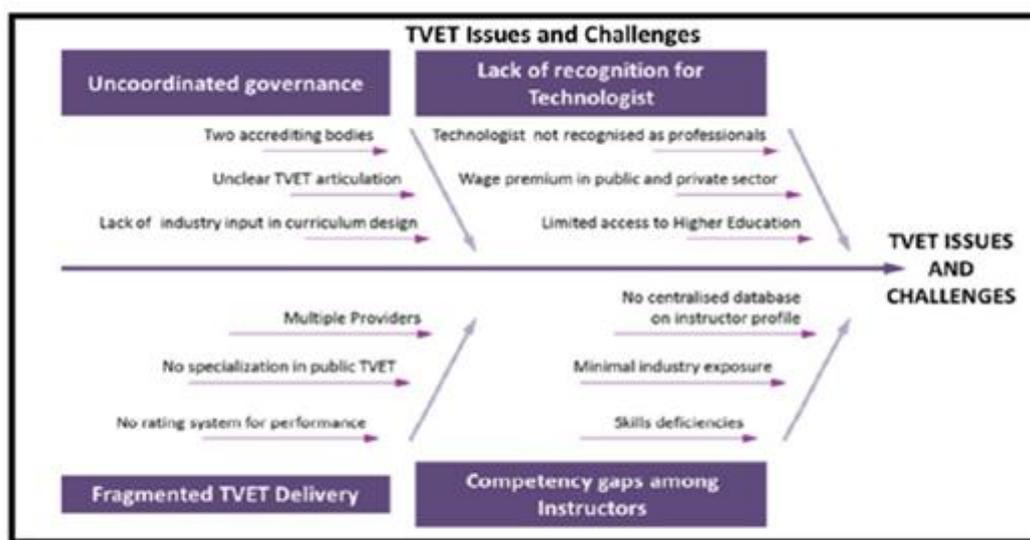
Figure 1. Malaysia TVET issues and challenges
Source: Economic Planning Unit & Prime Minister's Department (2015)

In academic or general education as well as in Technical and Vocational Education and Training (TVET), teachers are the backbone of education and training systems (Paryono, 2015). Thus, the role and competencies of TVET teachers are the key elements that reflect the brand image of vocational graduates. In addition, the quality of vocational teachers has been a serious issue in Southeast Asia (Paryono, 2015; Soysouvanh et al., 2013) including Malaysia (Lee & Lai, 2016; Mohamad, Saud, & Ahmad, 2009; Paryono, 2015). As the affordability of education sector decreases due to the twin pressures of increasing cost and static or reducing national incomes to pay for it, there is increasing pressure to innovate with services offering similar outcomes at lower cost. One of the common approaches is to enhance the teacher's skill so that they can take on more advanced and effective roles in profession. The concept of Competency-based performance as part of workforce development approach has gain significantly in TVET as well as Human Resource Development. There is a demand over competencies towards effective job performance for specific profession (Boyatzis, 1982; Spencer & Spencer, 1993; Suhairom, Musta'amal, Amin, & Johari, 2014; Vathanophas, Vichita; Thai-ngam, 2007).

In today's contemporary world of work, the practice of competency model lens through which the levels of knowledge, skills, abilities and other characteristics required to succeed in a job can be observed (Curnow, 2005; Lambert, Plank, Reid, & Fleming, 2014; Montier, Alai, & Kramer, 2006). A model of practice in vocational teaching profession needs to be developed to provide effective outcome through competency based education in vocational college (Diep & Hartmann, 2016). If this model is to be expanded, then there is a need to provide competent vocational college teachers in the profession settings. This will require an expansion of workforce development for vocational college teacher and a comprehensive model to assure their knowledge, skill and abilities to practice. This paper reviews and extends the development of a competency framework for vocational college teacher and in author special interest effort to contribute a competency based research in TVET in Malaysia.

2.0   Understanding competency

2.1   The meaning of competency

The origin Latin words "competentia" means ability to judge and speak (Internacional Project Management Association, 2006). Meanwhile, the English dictionary defines competence as the state of being suitably sufficient or fit. As research in competency has evolved, few words such as proficiency, capability and capacity are not suitable to relate with the term as it creates difficulty and confusion (Hoffmann, 1999; Vikram Singh Chouhan & Sandeep Srivastava, 2014).

2.2   Defining a competency

Despite the various competency study that has been conducted since the pioneering work by McClelland (1973), there is not a single general definition that has been accepted until now to represent the term competency. Previous researcher and practitioners operationalize the term based on their specific competency based approach for certain profession (Table 1). Prior to that, the evolution of competency cause multi – faceted positions and confusion (Hoffmann, 1999) from specific to common (Moore, Cheng, Dainty, Moore, & Cheng, 2006).

Table. 1: Definition of competency by previous authors in competency study;

Authors	Definitions
McClelland (1973)	Set of traits towards effective or superior jo job performance
Boyatzis (1982, 2008)	Relationship between individual to superior job performance to superior performance in a job
Spencer & Spencer (1993)	Ability and skills gains through training, job and life experience
Evarts (1987)	Managers underlying characteristic related to superior performance
Hager, Gonczi, & Athanasou (1994)	The standard or quality as the outcome of the individual's performance

Hoffmann (1999)	Underlying qualification and attributes of a person, observable behaviors, and standard on a person performance
Dubois & Rothwell (2004)	A person underlying criteria casually to individual performance and career development
Cernusca & Dima (2007)	A person underlying criteria casually to individual performance and career development

In general, the term competencies can be explained in table 2 using three main positions as either;

Table. 2: Three main positions toward a definition of the term

Definitions	Authors
To measures individual performance	(Cernusca & Dima, 2007; McClelland, 1973)
The important criteria or elements of the outcome of the person's performance	(Bartram, Robertson, & Callinan, 2008; DeVellis, 2012; Hoffmann, 1999; Spencer & Spencer, 1993; Suhairom, Musta'amal, Amin, & Johari, 2014)
The characteristics of a person to perform in job or profession	(Boyatzis, 1982; Mohd Ridhuan Mohd Jamil, Shariza Said, & Mohd Ibrahim K. Azeez, 2014; Wahba, 2010)

To develop a vocational college teacher competency model, For the purposes of conducting our study, the author used 'competencies' definition by Bartram et al. (2008) as the sets of underlying traits as a tool towards effective outcome. Competency is the list of knowledge, skills, abilities, behaviors, and personal ability towards effective job performance in profession.
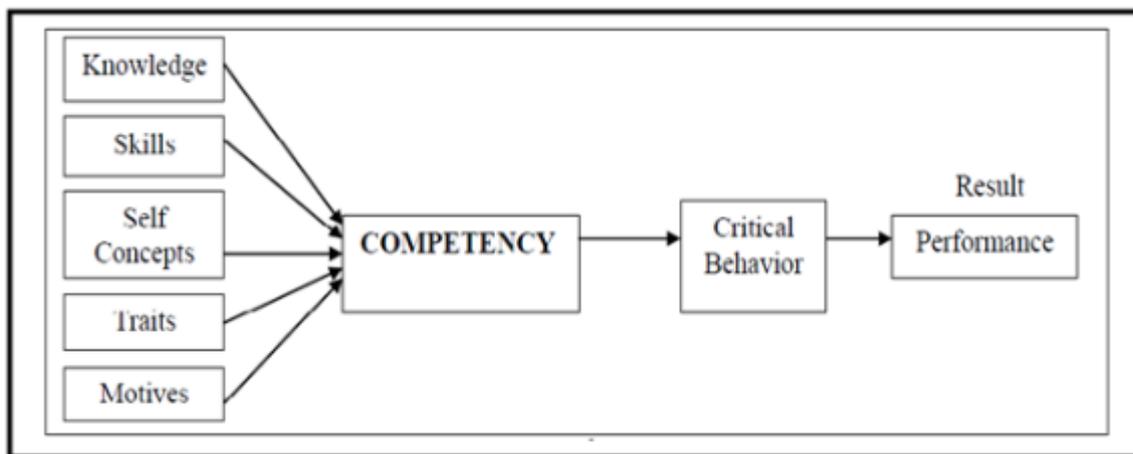
2.3 Competencies can be developed

The advantages of the behavior related approach or competency is that it can be developed in the future. Previous efforts on research in the field of education (Weidman, Pascarella, & Terenzini, 1992), training program (Morrow, Jarrett, & Rupinski, 1997) and psychotherapy (Hubble, Duncan, & Miller, 1999) proved that a person can improve their attitude however it is more based on the individual's perspective. Additionally, studies that aimed to understand a single factor often uses instrument to measure the factors such as anxiety. Yet, there is insufficient study that can improve the performance through a set of attitudes. As discussed by Boyatzis, Stubb, & Taylor (2002), by using the results from four main research, people can enhance their level of competencies comprising of emotional and social intelligence and lasting for years.

2.4 Types of competency

According to Cofsky (1993); five important components of competency including;

Knowledge	*Information inside a person for instance knowledge of surgeon on Human body*
Skill	*Person ability to perform job task for instance surgeon skills to conduct surgery*
Self-concepts	*Including the combination of person's self – image, attitudes and values. For instance, surgeon deliver self confidence in conducting the phases of surgery*
Traits	*Personal characteristics for instance the needs for surgeons to stay focus during operation hours*
Motives	*Physiological needs towards action. For instance, the ability of surgeons of motivate others during operation*

As shown in figure 2, the outcome of a critical behavior is towards effective job performance. The level of performance performed by a person is (low, moderate or high) determined by a person's set level of knowledge, skill, self – concept, traits and motive.

Figure 2. Concept of competency
Source: Adopted from Cofsky (1993)

Competencies can also be categorised and associated with mental aptitude or with operational abilities to perform in each job role. Therefore, individual competencies can be broadly categorised as depicted in the typology given in Figure 3:

Figure 3. Typology of dimensions of competency
Source: Adopted from Oise Delamare Deist & Winterton (2005)

Cognitive Competencies (Knowledge) are related to the individual's conceptual knowledge. *Functional Competencies (Skills*) are related to the individual's job - technical skills. **Social Competencies (Attitudes and Behaviors)** are related to the underlying behavior or attitude to communicate with others. *Meta Competencies (Motives and Traits)* are personal competencies to face current situation, apply or acquire new competencies as required by the profession knowledge and skills which is easier to observe since it is only on surface and can be developed. For a better comprehensive model to suit the vocational teaching profession, all the four dimensions of competencies were included in the framework, professional competencies will be built as Cognitive Competencies, teaching competencies were categorized as Functional Competencies and communication competence as Social Competencies. To make the framework more holistic, the last dimension of Meta Competencies was also included as for personal competencies. The concept of Meta Competency was initially proposed by Briscoe & Hall (1999) as a competency that is so powerful that it influences an individual's ability to apply and acquire other competencies. Meta Competencies are overarching personal competencies concerned with the ability to understand the situation on hand, adopt and apply existing competencies or acquire new competencies as and when required (Delamare Le Deist & Winterton, 2005). The details regarding the proposed domains using a comprehensive framework will be explained in section 7.0.

2.5 The competency based approach

The competence root work was contributed by Katz in 1950s. Using the framework to understand the performance of effective managers from the perspective of skills, Katz (1974) argued that skills is not necessary inborn but as an ability which can be enhance through training and resulted leading towards effective job performance. Hence, the effort of (Katz, 1955, 1974) became the foundation for the concept of competency based approach. The term competency was later introduced by white (1959) as the underlying traits of a person related to effective performance. However, in literature, it has been expanded by (McClelland, 1973) which argue that testing for competencies is more accurate compared to the traditional aptitude and intelligent test approach. The competency approach focuses on effective job performers to distinguish with less successful performer (Oise Delamare Deist & Winterton, 2005). In the 1980s the competence based approach trough modelling had attracted many researcher and practitioner as part of the tools to increase the level of individual ability and organization development. Prior to that, the term competence and competency has been used significantly to measure employee performance the professional development.

2.6 Development of competency model

Rigorous research regarding the practice of competency based approach identified the utilization of models for specific profession such as culinary (Suhairom et al., 2014), hospitality (Bharwani & Talib, 2017) and education (Bohne, Eicker, & Haseloff, 2017) also the needs in vocational teaching profession (Diep & Hartmann, 2016; Soysouvanh et al., 2013; Spöttl &

Steinbeis, 2016). Competency models play a role as a reference platform for workforce competency management. However, for this study, the development process is adopted on Boyatzis (1982) and Spencer & Spencer (1993) methods in efforts towards developing and validating competency model for vocational college teachers.

### 2.7   Importance of competency model

The significance of competency models as one of the comprehensive approach (Mansfield, 1996; McLagan, 1980; Rothwell & Lindholm, 1999) which can be developed to understand the required knowledge, skill and abilities in profession. A specific job - competency model reflects how individual employee understands the important underlying traits to be effective and competent in workplace settings. According to Boyatzis (1982), competency model used as "tools to assist the management in the selection and recruitment process". For instance, a competence model in vocational teaching models communicates vocational teachers on how the competent teachers must practice certain behavior despite necessary knowledge and skills. Once all the members in the profession are aware, top management levels will be able to identify on which elements is significant for an effective job performance.

3.0   Competencies and workplace

Spencer & Spencer (1993) noted that a competency study must be applied on performance at workplace rather than only comprehending the positive points to practice. For instance, the study on sales person, have influence sales performance. In other cases, some of the profession may not be able to indicate a significant result within the same phenomenon. Most of the organization based on knowledge and skill for selection and the minority focuses on personal competencies including motive and traits. As mentioned by Spencer and Spencer "In certain professions, testing for competency is more necessary thank skills or intelligence caused by restricted factors". However, developing approach related to competency is not by having the set of required knowledge, skill and abilities but need to consider the desire to perform. Hence, it requires a holistic development of knowledge, skills and abilities by designing comprehensive competency models for individual and workplace development.

4.0   Competency based effective job performance models

A theory of performance is the basic concept for competency. Using a basic competency theory as in figure 4, maximum performance is believed to occur when the person's ability is congruent with the need of job and organization (Boyatzis, 1982). The person's ability is explained by personal philosophy, vision, values; knowledge; competencies; life and career stage; style and interest. Job demands including the task needed as well as role responsibilities and tasks needed to be practice. Finally, on the aspects of organizational by the combination of culture and climate; maturity of the industry; strategic positioning within it; aspects of the economic, political, social, environmental, and religious milieu surrounding the organization also structure and systems.
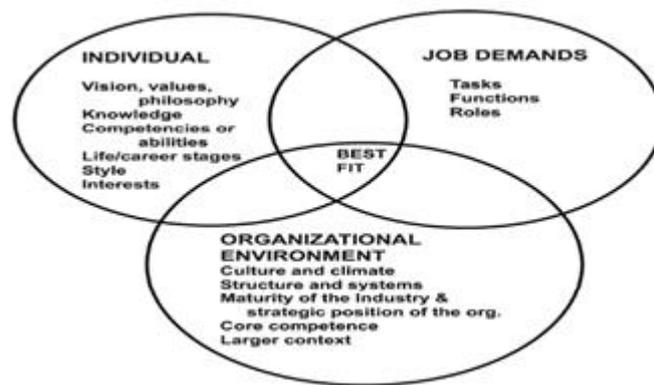
Figure 4. Theory of action and job performance: best fit (maximum performance, stimulation, and commitment = % area of maximum overlap or integration
Source: Adopted from Boyatzis (1982)

5.0   Competency models advantages
5.1   Enhancement the process of recruitment of vocational teacher

To identify most suitable candidate, models can be employed to establish the "behavior traits" needed in a job for instance the vocational teacher and the extent to which these are possessed by different candidates.

5.2   Enhancement of vocational teacher career development
In Competency based Human resource, models link the corporate mission, vision and goals towards the development activities such as a vocational teacher to involve in top levels management.

5.3   Establishment of connectivity through Integration of HR processes
Competency model can be implemented for HR functions to manage HR system systematically and consistency across many levels of HR activities that impact vocational teacher performance through human resource development practices.

5.4   Identifying vocational teacher training needs
As part of development tools, competency models assist many organizational including schools to develop existing vocational teacher to measure individual capability through strengths and weaknesses so that future professional development is identified.

6.0   Challenges with using competency models
Modelling was not the only solutions in human resource function. Framing competencies as performance outcomes can affect the personal development process in terms of knowledge and skills (Sanghi, 2007). Thus, idiosyncratic competencies might be overlooked since the model only reflects specific personal criteria that fit with the model with less facilitate acquisition of competencies where a gap exists. Besides, previous authors have highlighted that it was difficult to define and further assesses the knowledge, skills and abilities of person. Such competencies are based from the assumptions for instance behaviors on maturity and

independent among others. Prior to that, competency measurement is needed. In addition, down approach was necessary to ensure that competency framework can be shared with all levels of management to create acceptance (Sanchez, 2000) and reach organizational goals.

To respond the gaps in competency acquisition, professional development through training can be implemented to enhance the current competency status. In contrast, ineffective behavior may prevent the worker from accomplishing job tasks and organizational goals. Based on those challenges, modelling may be the most appropriate for organization to reset current competency elements and future desire competencies. Results from the analysis can predict employee's future within organization. The employee might benefit far greater in the long run knowing that other organizations within the industry or across industries would be a better career fit.

7.0 Proposed competencies model

The growing interest towards identifying effective teaching has encourages researchers to address both on how to measure teacher performance (Gupta, Chong, & Leong, 2015; Steinberg & Garrett, 2016). As suggested by Nze & Ginestié (2012), great teaching exist by a clear teaching vision. This required vision which is later transformed into certain guidelines to ensure students learning outcomes and teacher performance. For this reason, the performance standards have been introduced to measure teacher's performance in teaching profession (Celik, 2011). Furthermore, competencies lists have been utilized to describe the criteria on standards using the elements of knowledge, skills and abilities (Kamis, Mohamed, Hanapi, Che Kob, & Jamaluddin, 2016; Suhairom et al., 2014). The objective of this study is to develop a competency model for effective job performance among vocational college teachers in Malaysia. Figure 5 is a model framework which will be developed using four domains namely (1) Teaching competence (2) Professional Competence (3) Communication Competency and (4) Personal Competence;
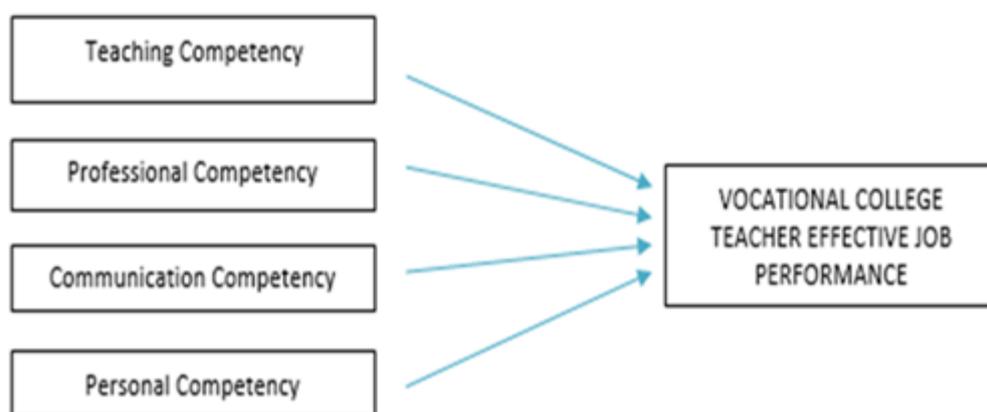

Figure 5. Model framework which will be developed using four domains

7.1 Competency domains

Teaching competency refers to the ability of teachers to combined both theoretical, practical or integrated instruction in teaching duties successfully (Diep & Hartmann, 2016). Teachers must be able to outline learning objectives and teaching content (Ball et al., 2008) based on

considering individual learners and curricula. Vocational teachers should also master different teaching approach and implement practical methods to reflect learning objectives. **_Professional Competency_** is the second domain to ensure teachers become contents experts with the latest knowledge to impart knowledge on learners (Grollmann, 2008). Vocational teachers must possess the depth and breadth of knowledge and skills related to real work environment. Failure of this, will produce the labour market with insufficient skilled required from the industry (Oluwasola, 2014). To ensure that the delivery of knowledge is attractive, advice and convince learner in learning process much dependent of **_teacher communication competence_** (Oluwasola, 2014). This competence also helps teachers to communicate effectively with parents of learner, colleges as well as industrial related person. The most important interaction occurs in the process of conveying learning contents, controlling the classrooms and consulting the learners (Amiruddin et al., 2015; Diep & Hartmann, 2016). Last domain that supports the framework is **_personal competency_**. Self – images, ethics and personal goals is the kind of personal traits that might influence teachers effective job performance behavior (Yusof, Roddin, & Awang, 2015). They must continuously practice and keep themselves on new relevant theory and new technologies to use in classrooms especially in the new environmentally friendly technologies (Roberts, Dooley, Harlin, & Murphrey, 2006)

8.0   Methodology
Structural Equation Model (SEM) by AMOS software will be utilized to run the confirmatory factor analysis and model validity. SEM has been known as one of the Multivariate statistical conduct statistical to run factor analysis, multiple regression and path analysis (Hox & Bechger, 1998) and having advantages on model interdependencies (Hair, Black, Babin, & Anderson, 2009), overall model fit (Hooper, Coughlan, & Mullen, 2008) also greater recognition regarding validity (Hair et al., 2009). For the current study, AMOS will be used to test and estimate causal relationships between key domains proposed in the study. According to Zainudin (2012), AMOS can analyses theoretical framework directly, able to find models that best fit data in hand and able to test the inter-relationships among constructs whereas confirmatory factor analysis (CFA) is a special form of factor analysis employed to test whether the measures of a construct are consistent with the researcher's understanding of the nature of that domains. Both of this analysis method will be used to test the research model and further verify the hypotheses in this study.

9.0   Theoretical Implications
The review of competency models development in this study makes a valuable theoretical contribution by proposing a holistic competency framework for vocational college teachers in Malaysia. Thus, the study has brought into focus of the importance of developing competencies other than only those related to general teaching profession. Besides functional competencies, the vocational college teachers must develop cognitive competencies which play a crucial role in strategically responding to complexities and challenges of the demand from the industry for skilled graduates. Moreover, the communication with colleagues is an important part of teaching and learning practices in vocational education. Vocational college teachers need to develop social competencies to face the different challenge and be proactive to meet the demand from the industry. Finally, the framework of vocational college teacher's competencies repertoire of a vocational profession must also include meta competencies which are overarching personal competencies and intrinsic personality traits which enable an individual to understand,

monitor and manage her/his own performance and allow her/him to dynamically respond to on-going graduate's employability challenge.

10.0   Practical implications
From the practical perspective, the proposed competencies framework could prove to be a reference towards managing talent in vocational teaching profession. Additionally, the framework can ensure efforts towards talent identification, retention and development based on the right action. Considering as blueprint for human resource department, each can further improve their specific elements of competencies as required by higher management levels for effective job performance. Despites measuring core competencies is challenges, it is practical to measure intrinsic competencies such as knowledge and skills especially for vocational college teacher recruitment. The model can also assist vocational college teachers to observe their own potential by the set of knowledge, skills and abilities for individual development and turn job responsibilities into effective development strategy. From the side of diagnostic, more holistic approach competency model provides meaningful information to measure individual core abilities during recruitment, training needs assessment, career planning and development initiatives. For educational and training, findings from this study could be used by educationist and trainers as part of the inputs in preparing module and curricula to cater current demand from the industry with regards to the competencies of vocational teachers.

11.0   Limitations and future research directions
The proposed competency framework is based on previous literature and needs to empirically be carried out for more coherent results. Additional studies could be proposed across different industry and segments to retest the proposed framework. This could be conducted through expert consensus from Delphi study. As a preliminary framework, the author proposed model with necessary competencies through item pool which may reflect the current job needs for vocational teacher's profession. To have more conceptual understanding regarding the variables in support to ascertain the underlying factor model, factor analysis should be carried out. Thus, more significant competency model could be developed. As a parallel effort towards competency instrument, results from both competency based performance approach could further be used as input towards competency profiling. Competency profiling can be used as the information for preparing professional development and career progression among members in the profession.

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