INTERNATIONAL JOURNAL OF SUSTAINABLE CONSTRUCTION ENGINEERING AND TECHNOLOGY
VOL. 13 NO. 4 (2022) 369-389

IJSCET

http://publisher.uthm.edu.my/ojs/index.php/ijscet

ISSN : 2180-3242 e-ISSN : 2600-7959

International Journal of Sustainable Construction Engineering and Technology

Model of Academics Professional Development Factors for Higher Education Institutions

Hebah Ahmed Ali Elatawneh[1], Safiah Sidek[1]*, Najmaddin Abo Mosali[2]

[1]Institute of Technology Management and Entrepreneurship,
University Technical Malaysia Melaka, MALAYSIA

[2]20 Surrey Drive, CV3 1PL Coventry, UNITED KINGDOM

*Corresponding Author

DOI: https://doi.org/10.30880/ijscet.10.30880/ijscet.2022.13.04.032
Received 30 October 2022; Accepted 30 October 2022; Available online 13 November 2022

Abstract: This paper presents a study on developing a structural equation model of factors affecting UAE Academics Professional Development (APD) programs. Data used to develop the model was collected from questionnaire survey amongst three of UAE Higher Education Institutions. The model which comprised of seven independent constructs and one dependent construct was developed and assessed using AMOS SEM software. At the initial stage, eight measurement models (which is the eight constructs altogether) were developed and assessed individually using confirmatory factor analysis (CFA) of the software until it achieves goodness of fit. Then these eight measurement models are tied up into structural model which also assessed using CFA to find the goodness of fit. Once the structural model has achieved the goodness of fit, the path analysis or known as hypotheses testing was conducted on the model. The hypotheses testing found that five constructs have significant effect to academic's professional development (APD) which are the i) design of teaching plan, ii) teaching skills, iii) communication skills, iv) expertise skill in the lesson content, and v) technology. While, two constructs which are i) individual and occupational identity and ii) policy and strategy do not have significant relationship with quality academic professional development. This model contributed to the body of knowledge and also to the related parties that involved in developing academic professional activities

Keywords: PLS Model, academic professional development

1. Introduction

UAE has two accredited bodies; the first body was created by the Federal Ministry of Higher Education and Scientific Research in the year of 2000 known as Commission for Academic Accreditation (CAA) which aims to implement quality control on the higher institution of learning. The second body was created by Dubai government in 2006 known as the Dubai Knowledge and Human Development Authority (KHDA) which is to licence free zone institutions. In 2008, KHDA launched the University Quality Assurance International Board (UQAIB) to assess tertiary education in free zones. UQAIB's role is to ensure that the offered programmes are equivalent to those offered in the home market according to KHDA executive director for higher education (DKHD, 2012).

Abubakar and Freeman (2019) have advocated the implementation of TQM in these HEIs, which involves training for a quality culture in order to enable people to better serve, improve the student experience, or generate insightful

*Corresponding author: safiahsidek@utem.edu.my

study, in their academic and administrative positions. However, it is a challenge for the university to get the world recognised accreditation as they need to ensure and maintain their quality. Furthermore, the limited available research indicates that UAE HEIs need to concentrate on enhancing Professional Development (PD) of academics to enhance teaching and learning efficiency. For example, Raji (2019), emphasising the importance of improving the standard of teaching at HEIs, concluded that these initiatives should be proposed in order to enhance the manner in which they are designed, implemented and evaluated. The study suggested that the quality of teaching be improved.

The provision of quality higher education requires an immense effort as it involves ensuring the quality of all aspects, including the quality of the teaching. However, previous studies have shown that teaching practise has an insufficiently moderate degree of technology adoption and this adoption must be strengthened with greater focus and preparation. In order to achieve a teaching quality framework in the practise of staff (Al Keyoome, 2002; DKHD, 2012; Abubakar et al., 2019; Raji, 2019), further efforts must also be made to develop the culture of quality amongst academics.

Due to its significance as the top priority in the position of HEI's academics, teaching quality is the emphasis. This research also focuses on concerns related to improving the standard of teachings and related PD of academics posed by recent studies. The academic experience of the researcher in HEIs also support the need to preserve and enhance the standard of teaching and associated academic PhD. The studied documentation on enhancing the standard of teaching and related PD for academics in the context of HE highlighted a void in each of these fields. Some studies are in fact about investigating the impact of PD on enhancing teaching quality and learning. However, earlier research has not covered the topic of identifying possible consequences for PD academics in HEIs for enhancing teaching efficiency. For this purpose, further research is needed in the current study to identify these implications.

There is a void in the field of improved educational quality and associated PD of academics in the sense of UAE HEIs. The HEIs have taken on consistency and already have a self-evaluation process to undertake an external analysis and evaluation of standards. In order to recognise possible consequences for the PD of academia, the increase in teaching quality as an aspect of the quality scope must be dealt with as another element of the same size. The emphasis on the implementation of educational innovations in teaching practise in the UAE is minimal available research on HEIs (Al-hashmi, 2002; Al-Rabiey, 2002).

The present study aims to fill a gap between the standard of education and the associated PD of the literature indicated academics, particularly within the context of HE in the United Arab Emirates. The study was conceived to identify possible changes in the standard of teaching for PD of HEI students. Identifying these consequences depends on the fact that educational quality and PD for academics are associated fields and that specific changes can influence each other. Therefore, for the purpose of the current study the researchers designed a specific theoretical framework. For most of the previous decade, the subject of quality has been firmly on the agenda of education institutions in the UAE. Greater access to education for all, particularly higher education, as well as an atmosphere of enhanced accountability are viewed as the key reasons for a greater emphasis on quality (O'Sullivan, 2016). Other reasons include shifting student expectations, which are not only more diverse in type owing to the number of nationalities living in the UAE, but are more considered as clientele in economic terms. These clientele have more options for institutions than ever before (O'Sullivan, 2016). The relevance of education in encouraging national economic growth, as well as the importance of international students to the national economy, underscore the need of ensuring quality within the UAE education system. Quality enrichment programmes must not only be deeply established in all educational institutions, but they must also be visible and rigorous.

2. Professional Development to Improve Teaching Quality in Higher Education

Professional Development (PD) has been highly emphasised in order to follow modern quality methods for coping with developments and enhancing Higher education (HE) teaching and learning. Karagiorgi and Symeou (2016) conclude that teacher education has been affected critically by new technology, economic development, and a growing need for quality education. Zuber-Skerritt (1992) stated that "Most higher education institutions in North America, Europe and Australia have created units or centres in the past 20 years or so to improve learning and education". Due to the demand for responsibility for HE teaching and the need to respond to the shift in teachers, HEIs have given greater attention to the PD of academics. PD has therefore been needed to enhance education and learning quality by improving the skills and knowledge of teachers.

Barnard et al. (2019) suggest that the concept of academic work must be restructured on the basis of PD. In order to enhance teaching/learning, the academic activities in the HEIs should also be reorganised by supporting PD in academics. Avidov-Ungar et al. (2018) argued that in the changing environment, academics and administrators seek continuous PD in the same way as other information workers. Further, Rose and Kumar (2006) assert that to optimise efforts to improve education quality, the quality of educators in each and every aspect of their duties should be improved. Although Collinson et al. (2010) stress a request to PD for academics, Rose and Kumar are specifically concerned with improving the standard of academics as an involvement for PD. The PD for academics is seen as an integral element of the whole HE improvement process that introduces academics to the evolving world of education to current know-how and skills.

2.1 Forms of Professional Development for Academics

The idea of professional development for academics in HEIs is primarily aimed at increasing the awareness and skills of university students in improving their academic position. Different words like 'staff development,' 'faculty development,' 'in-service training' and 'lifelong learning' are described as 'PD' in literature. These different words, however, concentrate on the growth of academics to strengthen their academic positions and functions. According to Cavazos et al. (2018), this word is used interchangeably with both the mechanism of personal growth and organisational development, staff development, professional development,' and on-service education. They claim that "PD" refers more to a "profession" and regards faculty as professionals relative to other words. PD normally aims at improving the working conditions of individuals or groups. Ruben (2018) claimed that a teacher's new skills will improve the learning of students if they are exercised in the classroom shows the idea. It is essential to reflective professionals to change their teaching practises through PD to enhance learning for students.

2.2 Professional Development of Academics Through Reflective Practice

The reflection on teaching is considered a major tool for improving the standard of education and learning in the HE environment. By using reflection approach in the PD in HE, academics are involved in introducing improvements which have been initiated by themselves and not by others. Vázquez and Ellison (2018) emphasise that reflective practise in the PD of university researchers is recommended to improve the standard of teaching in HE. Kourkoutas et al. (2017) suggest that reflection practise can be seen as a helpful PD method for teachers to learn their teaching practise in order to increase the quality of classroom teaching.

The inquiry may be raised about a particular paradigm that reflective practice relies on. López and Larrea (2017) point out that reflective practice is based on 'experiential learning' traditionally and 'situated cognition'. The scholars state that experiential learning stresses that effective learning begins with problematic experience in the learning process, while situated cognition stresses the importance of the process and context of learning. The base of reflective practice emphasizes the importance of 'lifelong learning' for academics in making meaningful change in their teaching practices in order to improve the quality of teaching/learning.

McCormack and McCance (2016) suggest that a reflective practise PD project is cycled into four stages. The cycle starts with a concrete intervention on a problem matter, carefully assesses the problem, then refines or adjusts the problem, and finally focuses on the chosen issue in order to revisit it.

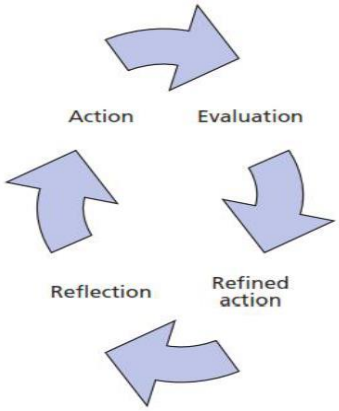

Fig. 1 - The cycle of reflective practice

Farrell (2008) notes that 'exercising in action research projects, writing in a doctrinal journal and entering a teacher development group, the faculty can use three particular methods separately or together to promote the professional development reflection practise.' These methods offer an opportunity for academics to analyse and represent what they have learned in the desirable transition. The preparation of a suitable environment to perform a good reflexive professional development is also necessary. Maassen and Yates (2018) note that the two main techniques for HEIs are planning and co-ordinating an effective reflective project for reflective practise; the organisation concerns organising teachers' meetings and coordination concerns unique procedures during the conduct of the reflective project. The professional development reflective practise may be useful for teachers and students alike. Maassen and Yates (2018) show students benefiting from "enhanced and comprehensive learning experiences" in the reflective practise project; promoting their own reflection; expression of preferences; and opportunities to participate.

2.3 Professional Development Program of Academics

Some professional development studies for academics have shown that there are not enough professional development programs in HEIs to boost the quality of teaching. For example, McInnis et al. (2021) discussed a national study conducted on professional development programs in teaching methods of 15 Australian university students, which showed that in the last 2 years only 25% of the samples obtained any training and 34% at first graduation. In the Queensland University of Technology (OUT in Australia, Ballantyne et al. (2000) also surveyed 87 employees and 127 students, concluding that the resources provided by the faculty are not constantly open, with no time available to participate. To some extent these three studies support the idea that current professional development programs in HEIs are ineffective and that further initiatives are required to improve the standard of teaching. The goal of improving education quality, particularly with regard to accelerating educational changes and innovations, will not be supported by an inadequate professional development for academics. This situation will theoretically contribute to further preparing professional development programs for the enhancement of the standard of education in these institutions. HEIs should therefore concentrate more on preparing and coordinating adequate and effective initiatives to enhance the quality of teaching.

In terms of assessment criteria for evaluating the effectiveness of the programmers in the service of education and education, the elements of professional development programs architecture and necessary change may be used. Fishman et al. (2003) state that "Professional development was evaluated using the combination of teacher reflection, student observation in classroom and ongoing student performance evaluation." In order to build an objective basis for evidence on professional development programs efficacy, Fishman et al. (2003) presented an 'Iterative Professional Development Assessment Model' (Figure 2). The model starts with basic criteria, including student performance and professional development design, to determine the efficiency of professional development programs for teaching and student performance.

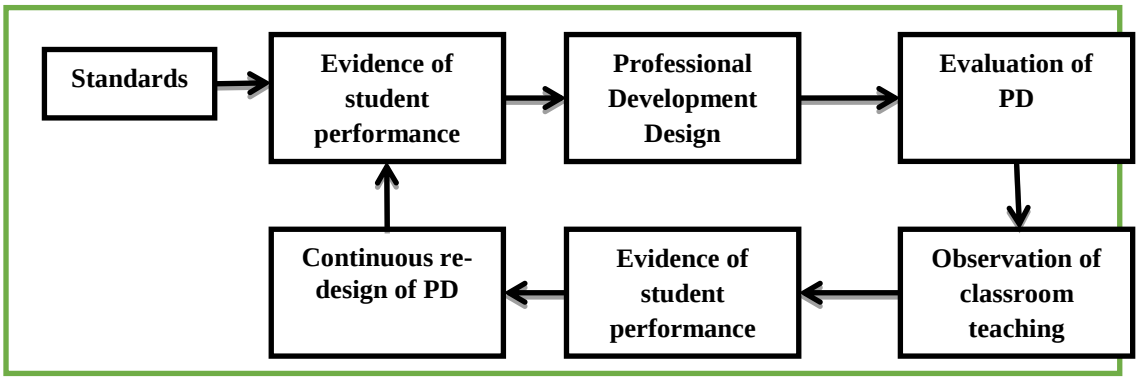

Fig. Error! No text of specified style in document. **- Iterative model for the evaluation of professional development (Fishman et al., 2003)**

Owen (2015) argues that efforts have not yet been made in defining basic components of successful professional development programs due to the fact that 'confused efficacy criteria'; 'misguided key impact hunting' and 'neglecting consistency problems.' Perhaps it is very difficult to quantify the efficacy of professional development programs given to scholars in HEIs because several different factors influence the professional development, a broad area involving inter-relationships with unique academic aspects. Owen (2015) states that the agreement has not been reached with acceptable professional development efficiency criteria; modern professional development programs were achieved. The following levels have been evaluated:

a) To assess the reactions to experience of participants
b) Assess the technical skills and know-how gained by participants
c) Assess the practical application of expertise and skills that participants have learned
d) Assess the influence of awareness and skills change on student learning by participants.

For academics in HEIs, the basic principles to promote the efficacy of professional development programs could include:

i. Clear vision and practical objectives are required by professional development programs
ii. Giving academics the ability to engage in professional development programs preparation is important
iii. Professional development programs should be aligned to the academics' professional development criteria
iv. It is important to reflect on the content of professional development programs on students' learning
v. Encouraging the involvement of academics in professional development programs is important
vi. Professional development programs should contain creative academic theories

vii. The up-to-date IT of the professional development programs should be implemented
viii. The relation between theory and practice, quality of teaching and learning in professional development programs is extremely important
ix. High-quality experts should be trained to develop the professional developers
x. An appropriate assessment method for calculating the performance of the professional development programs should be carried out

Given that the professional development of HEI academics faces specific challenges and obstacles, the achievement of professional development programs related to the enhancement of quality in teaching is crucial. In that case, it is suggested that the planning, coordination and assessment of these programmes should be given greater importance to HEIs. The attention paid to the three dimensions helps to provide an effective atmosphere for professional development activities to enhance the quality of teaching. The required background for conducting professional development helps administrations to better execute the professional development programs and facilitates the successful involvement of academics. Professional development of academics will therefore help the goals of enhancing teaching quality in HEIs and achieve them. This segment addresses specific key issues in the sense of academic work and the effect on academic performance in the professional development.

2.4 Critical Issues in Academic Work Affecting Professional Development

The professional development programs (PDP) needs of academics should be first evaluated and identified to achieve the goals of PDPs with regard to improvement in teaching quality. Any programme designed to professionally grow any form of workforce is considered to be focused on recognising these needs. Heras-Saizarbitoria and Boiral (2015) suggest that needs evaluation helps a business enhance work efficiency by finding differences between employee's current skills and the skills needed. Kornevs et al. (2019) said that "Training needs analysis (TNA) refers to the specific task of identifying the appropriate training programme format and content". That is why evaluation or review of the professional development (PD) needs of academics is needed to set practical objectives and create a content that is applicable with suitable formats for PDP to improve the quality of teaching. According to Onderi and Croll (2008), the application of TNA to meet university PD requirements is necessary for the improvement of university quality In order to establish effective PDPs related to improved teaching efficiency, it will be important to recognise and assess academic PD needs.

Many studies have shown that the current PDPs do not fulfil the PD requirements of academics and emphasise integrating their requirements with PD activities. Falkner et al. (2018), for example, examined the status of the PD in tourism and hospitality teachers in VET and suggest a further correlation between the PD and the work of academics. In addition, Shareef (2008) researched mentorship in Maldivian primary school as a PD technique for teachers. He disclosed that the approach was not suited for their PD requirements.

While current PDPs are facing new challenges, the management of HEIs must concentrate more on planning for these programmers the required schedule, execution and evaluation. In the preparation of such PDPs for enhancing the standard of teaching, not necessarily the essence of developing academic and related professional activities should be taken into account.

3. Data for Developing The Model

The data used to develop the model was collected through a structured questionnaire survey. The questionnaire was constructed based on 72 factors where 63 factors were clustered into seven independents constructs namely design teaching plan; communication skills; expertise skill in the lesson content; individual and occupational; policy and strategy; technological factors; and teaching skills. Another 9 factors were for dependent construct which is academic professional development. Respondents of the survey were academicians from three higher learning institutions in UAE. They were requested to gauge using 5-points Likert scale of each factor in influencing/affecting the academic professional development programs.

The respondents were from the first three public university in UAE including teaching staff of (higher colleges of technology; United Arab Emirates University and Zayed University). The population of HEI is approximately 2600 as reported in the Ministry of Labour's website. The selection of respondents was based on random sampling technique and the sample size was determined using Krejcie & Morgan (1970) table as shown in Table 1. By considering the target population is 2600, the appropriate sample size for this research is 335.

A total of 350 questionnaires were distributed to the respondents from the selected universities using simple random approach. However, 283 valid responses were collected from the questionnaire survey. This represents 80.9% response rate which is considered good representation of the populations. Even though the valid responses are less than the minimum sample size, however Goh and Hooper, 2009 stated that greater than 100 valid samples are viewed as a realistic size and exceeding 200 is labelled as a large sample.

4. Structural Equation Modelling (SEM)

SEM is a family of statistical models that seeks to explain the relationships among multiple variables. According to Tabachnick et al. (2007) SEM combines factor analysis, canonical correlation, and multiple regressions. It was used to test the hypotheses arising from the model. In order to perform the SEM analysis, the two-stage approach were adopted. In the first stage (measurement model), the analysis was conducted by specifying the causal relationships between the observed variables (items) and the underlying theoretical constructs using confirmatory factor analysis (CFA) and path analysis (Awang, 2014).

4.1 Measures of Fitness Index

According to Byrne (2013, the measurement model depicts the links between the latent variables and their observed measures (CFA model). CFA model focuses solely on the link between factors and their measured variables, within the framework of SEM. According to Hair et al. (2010), confirmatory factor analysis (CFA) enables us to test how well the measured variables represent the constructs. In this study, the measurement models for each construct were assessed using confirmatory factor analysis (CFA). Confirmatory factor analysis (CFA) was performed on the measurement model to assess the uni-dimensionality, reliability, and validity of measures. Two broad approaches were used in the CFA to assess the measurement model. First, consideration of the fitness indices criteria and second, evaluating the validity and reliability of the measurement model.

The fitness index is an index of how well a model fits the data from which it was generated. It's usually based on how well the data predicted by the model correspond to the data that were actually collected (Field, 2009). The criteria of successfully achieving the goal in SEM are dependent on a model achieving a collection of recommended acceptable values of several indices. This criterion applies to both the measurement and structural model of SEM. Although these indices apply universally, their recommended acceptable values have been a subject of contestation among authorities in the field of SEM. Table 1 shows the criteria of successfully achieving the goal in SEM.

Table 1 - Acceptable criteria for SEM model

(Hooper et al., 2008; Kline, 2011; Byrne, 2012; Awang, 2015; Cangur and Ercan, 2015)

Name of category	Acceptance level	Applicability
Factor loading	≥ 0.60	Measurement + structural model
Square multiple correlation (R^2)	≥ 0.20	Measurement + structural model
Correlation coefficient	≤ 0.85	Measurement model
Standardized beta	≤ 0.85	Structural model
Significance level	≤ 0.05	Structural model
Average Variance Extracted (AVE).	≥ 0.5	Measurement model
Construct Reliability (CR).	≥0.6	Measurement model
Modification Index.	≤15	Measurement + structural model

The fitness indices are measure that indicate how well a specified model reproduces the covariance matrix among the indicator variables (Hair et al., 2010). Hair et al. (2006; 2010) recommend the use of at least three fit indexes by including at least one index from each category of model fit. The three fitness categories are absolutely fit, incremental fit, and parsimonious fit. The information concerning the fitness index category and their level of acceptance are pulled from several authors and presented Table 2 shows the indices adopted in this research with their acceptable values.

Table 2 - Criteria of fitness indices
(Ramayah and Lee, 2012; Bollen et al., 2014)

Index	Name of fitness indices	Recommended value	Applicability
Absolute fit	Goodness-of-Fit Index (GFI)	≥ 0.8	Measurement model + Structural model
	Root Mean Square Error of Approximation (REMSEA).	≤ 0.08	
Incremental fit	Tucker-Lewis Index (TLI)	≥ 0.9	
	Comparative Fit Index (CFI)	≥ 0.9	
	Normed Fit Index (NFI)	≥ 0.8	
Parsimonious fit	Chi-Square/Degree of Freedom (ChiSq/df,)	≤ 3.0	

4.2 Confirmatory Factor Analysis on Measurement Models

Confirmatory factor analysis (CFA) is a more reliable method of factor analysis, which is employed to examine whether the measures of a construct are in agreement with the researcher's perspective of the nature of that construct (Awang, 2014). In fact, Awang (2015) stated that CFA procedure has substituted the older methods such as EFA to establish construct validity. Confirmatory factor analysis (CFA) is to test relationship that may exist between the observed variables under each hypothesised construct in order to quantitatively assess the quality of the factor structure which would provide further evidence of the construct validity of the new measurement.

Basically, the application of SEM with the combination of CFA for this research followed the standard steps as recommended by notable scholars (Hooper, 2008; Hair et al., 2011; Awang, 2015) such as: (1) model specification; (2) model identification; (3) estimation of parameter; (4) measure the fitness index; and (5) model re-specification. To be precise, in this research analysis process, the preliminary measure is to test the validity of the measurement model before assessing the structural model. Hence, both measurement and structural models were evaluated by model fitting through maximum likelihood (ML) estimation. The fitness indices and level of acceptance used as guideline in the assessment of the construct measurement models and structural equation models' fitness was presented in Table 4.9. Subsequently, re-specified models in this research were tested before using the models for further analysis and modification indices (MI) were used as a guide to detect specification error during the process of model re-specification.

Therefore, confirmatory factor analyses of the measurement model of the entire latent constructs in the research assessment framework evaluated are presented in the subsequent sections accordingly. In addition, initial measurement models, fitness indexes, modification indices and final measurement models were presented sequentially for each construct.

4.2.1 Design of Teaching Plan Measurement Model

The measurement model for the design of teaching plan factors is graphically presented on the relationship between response items and their underlying construct. Confirmatory factor analysis (CFA) was carried out and the results of the analysis are presented in Figure 3. Awang (2015) stated that in CFA, fitness indexes are the most important test, measurement because it focuses on the construct validity. Determining this validity will help to determine if a test measures what it aims to be measuring. If the fitness indexes failed to achieve the required level, it is necessary to refer to the factor loadings, then delete one item at a time from each construct with the lowest among the low factor loadings. Next, the model need be run and repeat the same process until the fitness indexes are attained. However, when a model is fit, but with low factor loading, items from each construct with low factor loadings are retained or unchanged because the model is already fit (Awang, 2015). This indicates that items with low factor loading cannot stop a model from being accepted provided it met all the requirements of a good model.

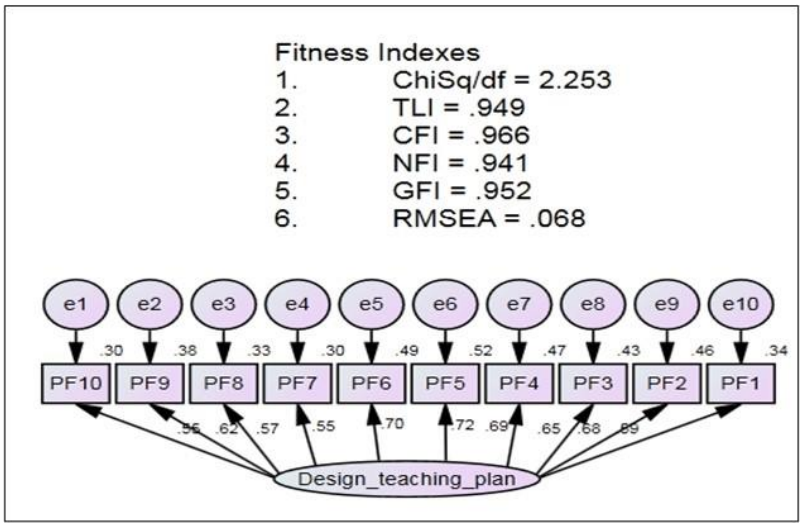

Fig. 3 - Design of teaching plan measurement model

Table 3 shows the measurement model for the design of teaching plan factors after fulfilled the entire requirement standards to fit the model.

Table 3 - Teaching plan measurement model fitness index

Fitness Index	Threshold value	Generated Value	Comments
Chisq/df	Chisq/df ≤ 3	2.253	The required level is achieved
TLI	TLI ≥ 0.9 means satisfactory	0.949	The required level is achieved
CFI	CFI ≥ 0.9 means satisfactory fit.	0.966	The required level is achieved
NFI	NFI ≥ 0.80 suggests a good fit	0.941	The required level is achieved
GFI	GFI ≥ 0.80 suggests a good fit.	0.952	The required level is achieved
RMSEA	RMSEA ≤ 0.08 mediocre fit.	0.068	The required level is achieved
Model is accepted			

Based on the analysis above, the measurement construct of the design of teaching plan factors had satisfied all the acceptable cut-off values as recommended in the fitness indexes (Awang, 2014).

4.2.2 Teaching Skills Measurement Model

The measurement model for teaching skills factors is graphically presented on the relationship between response items and their underlying teaching skills factors construct. Confirmatory factor analysis (CFA) was carried out and the result of the analysis presented in Figure 4. The construct of teaching skills factors measurement model has a total of 11 indicators items.

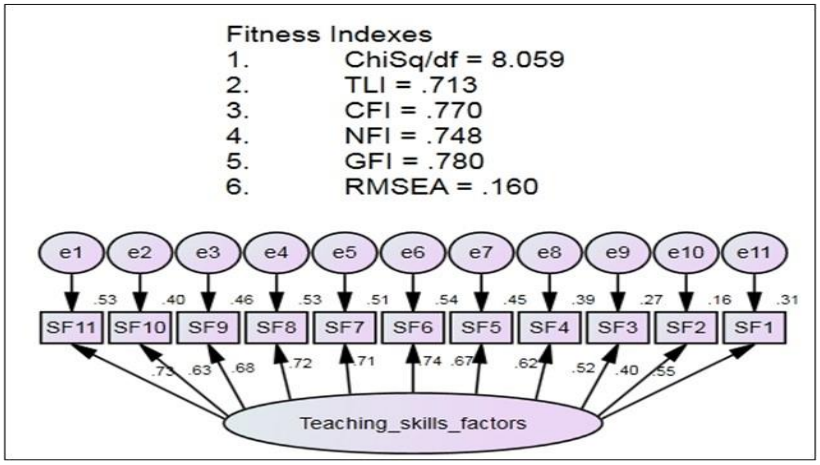

Fig. 4 - Initial teaching skill measurement model

The required level of NFI, TLI, and GFI were met, but the RMESA and Chisq/ def were not achieved as presented in Figure 4; hence, there was a need for modification. Therefore, the new measurement model was re-specified and the final measurement model for Teaching skills factors construct are presented in Figure 5. Hence, the researcher examined the Modification Indices (MI) and checked the manifest measurement error to ascertain which of them demonstrates high regression weights. Then, covariance was made between measurement errors having highest Modification Indices (MI).

After checking the factor loading of items to determine that they are more than 0.6, the researcher checked the Modification Indices (MI). According to Byrne (2013) and Hair et al. (2006), the modification indices that show high covariance and demonstrate high regression weights are potential manifests item to covary. The SF1, SF2, SF3 and SF4 that have low factor loadings were deleted. Thus, after fixing these problematic items, the measurement model was re-run, as recommended. The final CFA model is depicted in Figure 5.

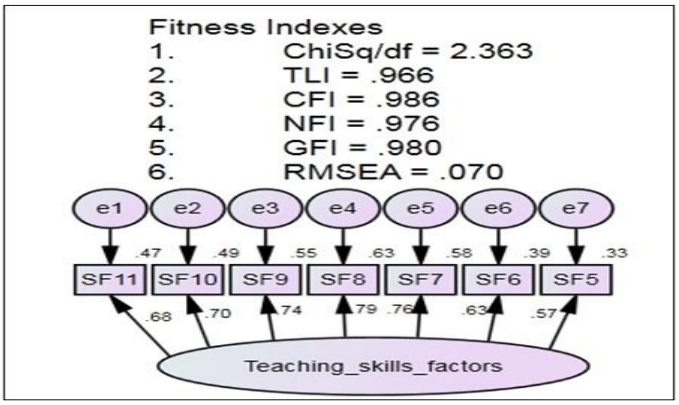

Fig. 5 - Final teaching skill measurement model

Based on the results of fitness indices relative to the recommended values, all these fit indices for the model 'Teaching skills factors' achieved the recommended values. Table 4 shows the measurement model for teaching skills factors after fulfilling the entire requirement standards to fit the model.

Table 4 - Teaching skills measurement model fitness index

Fitness Index	Threshold value	Generated Value	Comments
Chisq/df	Chisq/df ≤ 3	2.363	The required level is achieved
TLI	TLI ≥ 0.9 means satisfactory	0.966	The required level is achieved
CFI	CFI ≥ 0.9 means satisfactory fit.	0.986	The required level is achieved
NFI	NFI ≥ 0.80 suggests a good fit	0.976	The required level is achieved
GFI	GFI ≥ 0.80 suggests a good fit.	0.980	The required level is achieved
RMSEA	RMSEA ≤ 0.08 mediocre fit.	0.070	The required level is achieved
Model is accepted			

Therefore, the Teaching skills factors construct's measurement model had satisfied all the acceptable cut-off values as recommended in the goodness-of-fitness indexes (Awang, 2014).

4.2.3 Communication Skills Measurement Model

In the same order of presentation, Figure 6 and Table 5 present the results of the CFA for the Communication skills factors measurement model. The factor loading for each item, squared multiple correlation (R2) and fitness indexes were observed.

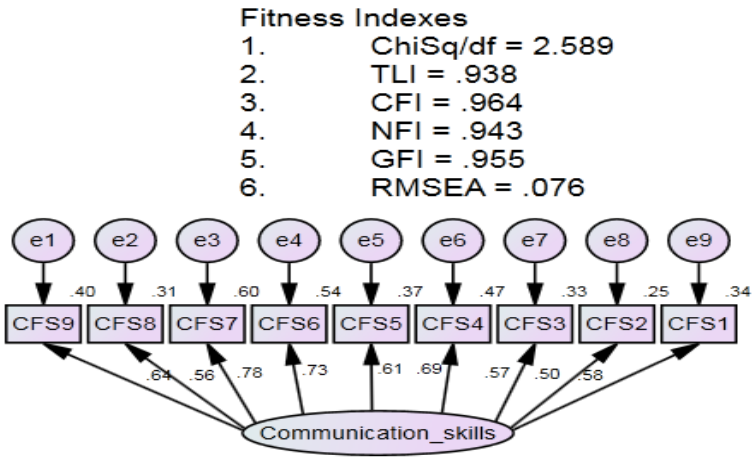

Fig. 7 - Final communication skills Measurement model

As shown in Figure 7, the construct of the communication skills factors measurement model has a total of nine indicators items with respective factor loadings. Based on the analysis of the 'Communication skills factors' for fitness criteria (such as the factor loading and the squared multiple correlation), it shows that all the factor loadings and the squared multiple correlations achieved the required level (≥ 0.50 for factor loading and ≥ 0.20 for squared multiple

correlation). Based on the results of the fitness indices relative to the recommended values, all these fit indices for the model 'Communication skills factors' achieved the recommended values as indicated in Table 5.

Table 5 - Communication skills measurement model fitness index

Fitness Index	Threshold value	Generated Value	Comments
Chisq/df	Chisq/df ≤ 3	2.589	The required level is achieved
TLI	TLI ≥ 0.9 means satisfactory	0.938	The required level is achieved
CFI	CFI ≥ 0.9 means satisfactory fit.	0.964	The required level is achieved
NFI	NFI ≥ 0.80 suggests a good fit	0.943	The required level is achieved
GFI	GFI ≥ 0.80 suggests a good fit.	0.955	The required level is achieved
RMSEA	RMSEA ≤ 0.08 mediocre fit.	0.076	The required level is achieved
Model is accepted			

Therefore, all the nine items of communication skills factors construct that satisfied the level of acceptance were used for the structural equation modelling in this research.

4.2.4 Technological Measurement Model

The measurement model for Technological factors is graphically presented on the relationship between response items and their underlying Technological factors construct. Confirmatory factor analysis (CFA) was carried out and the result of the analysis are presented in Figure 8 and Table 6. For the construct of the Technological factors' measurement model, factor loading for each item and fitness indexes for each of the items examined. The construct of the Technological factors measurement model has a total of eight indicators items. Based on the analysis of the model 'Technological factors' for other fitness criteria (such as the factor loading and the squared multiple correlation), it reveals that all the factor loadings and the squared multiple correlations achieved the required level (≥ 0.60 for factor loading and ≥ 0.20 for squared multiple correlation).

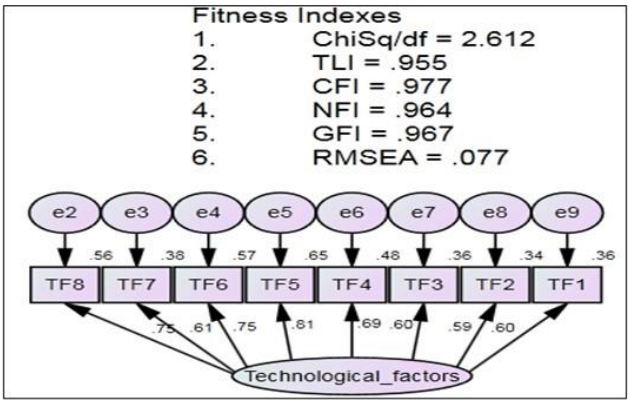

Fig. 8 - Initial measurement model for technological factors

Based on the analysis, the results of these fitness indices relative to the re-specified on the measurement model values, all these fit indices for the model 'Technological factors' achieved the recommended values as indicated in Table 6.

Table 6 - Technological measurement model fitness index

Fitness Index	Threshold value	Generated Value	Comments
Chisq/df	Chisq/df ≤ 3	2.612	The required level is achieved
TLI	TLI ≥ 0.9 means satisfactory	0.955	The required level is achieved
CFI	CFI ≥ 0.9 means satisfactory fit.	0.977	The required level is achieved
NFI	NFI ≥ 0.80 suggests a good fit	0.964	The required level is achieved
GFI	GFI ≥ 0.80 suggests a good fit.	0.967	The required level is achieved
RMSEA	RMSEA ≤ 0.08 mediocre fit.	0.077	The required level is achieved
Model is accepted			

Therefore, the construct of the Technological factors for the final measurement model had satisfied all the acceptable cut off values as recommended in the goodness-of-fitness indexes (Awang, 2014).

4.2.5 Expertise Skill in The Lesson Content Measurement Model

Figure 9, Table 7 present the result of the CFA for the expertise skill in the Lesson content factors measurement model. The factor loading for each item, squared multiple correlation (R2) and fitness indexes were observed. The construct of the expertise skill in the Lesson content factors measurement model, has a total of eight indicators items. Further analysis of the model 'The expertise skill in the Lesson content factors' for other fitness criteria (such as the factor loading and the squared multiple correlation) reveals that all the factor loadings and the squared multiple correlations achieved the required level (≥ 0.60 for factor loading and ≥ 0.20 for squared multiple correlation).

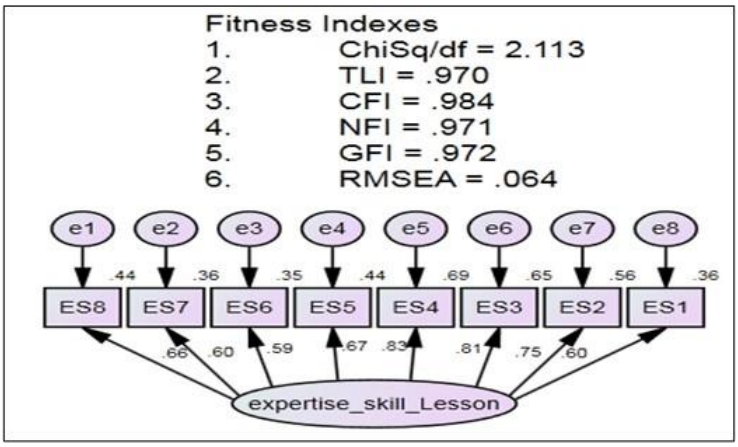

Fig. 9 - Initial measurement model for expertise skills in the lesson content factors

Based on the analysis of the results of these fitness indices relative to the recommended values, all of these fit indices for the model 'The expertise skill in the Lesson content factors' achieved the recommended values as indicated in Table 7.

Table 7 - Expertise skill measurement model fitness index

Fitness Index	Threshold value	Generated Value	Comments
Chisq/df	Chisq/df ≤ 3	2.113	The required level is achieved
TLI	TLI ≥ 0.9 means satisfactory	0.970	The required level is achieved
CFI	CFI ≥ 0.9 means satisfactory fit.	0.984	The required level is achieved
NFI	NFI ≥ 0.80 suggests a good fit	0.971	The required level is achieved
GFI	GFI ≥ 0.80 suggests a good fit.	0.972	The required level is achieved
RMSEA	RMSEA ≤ 0.08 mediocre fit.	0.064	The required level is achieved
Model is accepted			

Therefore, the items in the construct of the expertise skill in the Lesson content factors that satisfied the level of acceptance were used for the structural equation modelling in this research.

4.2.6 Model Individual And Occupational Identity Measurement Model

Figure 10 and Table 8 present the result of the confirmatory factor analysis (CFA) for the Individual and occupational identity measurement model. In the construct of the Individual and occupational identity measurement model, factor loading for each item, squared multiple correlation (R2) and fitness indexes for each of the items observed were presented. The essence was to identify whether the level of acceptance for every index is achieved in the Individual and occupational identity construct. The construct of the Individual and occupational identity measurement model has a total of eight indicators items. Further analysis of the model 'Individual and occupational identity' for other fitness criteria (such as the factor loading and the squared multiple correlation) reveals that all the factor loadings and the squared multiple correlations achieved the required level (≥ 0.60 for factor loading and ≥ 0.20 for squared multiple correlation).

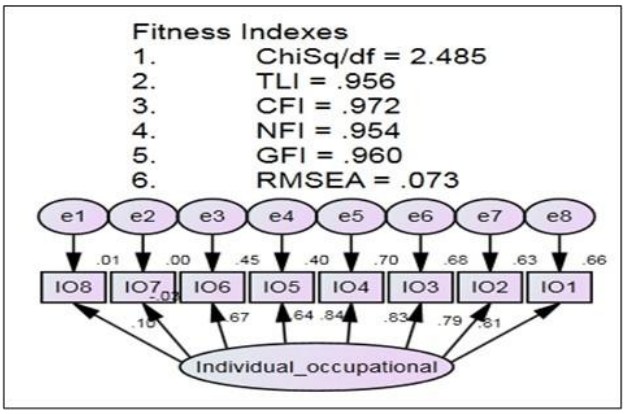

Fig. 10 - Individual and occupational identity measurement model

Based on the analysis, the results of these fitness indices relative to the recommended values, all these fit indices for the model 'Individual and occupational identity' achieved the recommended values as indicated in Table 8

Table 8 - Individual and occupational identity measurement model fitness index

Fitness Index	Threshold value	Generated Value	Comments
Chisq/df	Chisq/df ≤ 3	2.485	The required level is achieved
TLI	TLI ≥ 0.9 means satisfactory	0.956	The required level is achieved
CFI	CFI ≥ 0.9 means satisfactory fit.	0.972	The required level is achieved
NFI	NFI ≥ 0.80 suggests a good fit	0.954	The required level is achieved
GFI	GFI ≥ 0.80 suggests a good fit.	0.960	The required level is achieved
RMSEA	RMSEA ≤ 0.08 mediocre fit.	0.073	The required level is achieved
Model is accepted			

Therefore, the construct for the individual and occupational identity of measurement model had satisfied all the acceptable cut off values as recommended in the fitness indexes (Awang, 2014, 2015).

4.2.7 Policy and Strategy Measurement Model

In the construct of the Policy and strategy factors measurement model, factor loading for each item, squared multiple correlation (R2) and fitness indexes for each of the items observed were conducted. The essence was to identify whether the level of acceptance for every index is achieved in the Policy and strategy factors construct. The construct of the Policy and strategy measurement model has a total of seven indicator items.

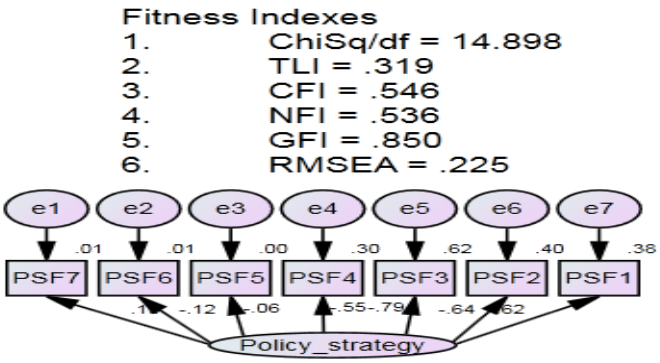

Fig. 11 - Initial measurement model for policy and strategy factors

The required level of NFI, TLI, and GFI are met, but the RMESA and Chisq/def were not achieved as presented in Figure 11; hence, there was a need for modification. Therefore, the new measurement model was re-specified and final measurement model for Policy and strategy factors construct are presented in Figure 11. Hence, the researcher examined the Modification Indices (MI) and checked the manifest measurement error to ascertain which of them

demonstrates high regression weights. Then, a covariance was made between measurement errors having highest Modification Indices (MI). After checking the factor loading of items and to ensure that they are more than 0.6, the researcher checked the Modification Indices (MI). According to Byrne (2013); and Hair et al. (2006), the modification indices that show high covariance and demonstrate high regression weights are potential manifests item to covary. The PSF6 and PSF7 have low factor loadings and they were deleted. Thus, after fixing these problematic items, the measurement model was re-run, as recommended. The final CFA model is depicted in Figure 12.

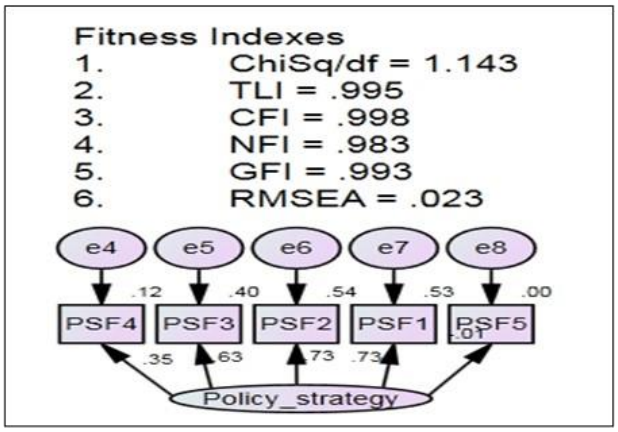

Fig. 12 - Final measurement model for policy and strategy factors

Based on the analysis, the results of these fitness indices relative to the recommended values show that all these fit indices for the model 'Policy and strategy factors' achieved the recommended values as shown in Table 9. Further analysis of the model 'Policy and strategy factors' for other fitness criteria (such as the factor loading and the squared multiple correlation) also reveals that all the factor loadings and the entire squared multiple correlations achieved the required level (≥ 0.60 for factor loading and ≥ 0.20 for squared multiple correlation).

Table 9 - Policy and strategy measurement model fitness index

Fitness Index	Threshold value	Generated Value	Comments
Chisq/df	Chisq/df < 3	1.143	The required level is achieved
TLI	TLI > 0.9 means satisfactory	0.995	The required level is achieved
CFI	CFI > 0.9 means satisfactory fit.	0.998	The required level is achieved
NFI	NFI > 0.80 suggests a good fit	0.983	The required level is achieved
GFI	GFI > 0.80 suggests a good fit.	0.993	The required level is achieved
RMSEA	RMSEA < 0.08 mediocre fit.	0.023	The required level is achieved
Model is accepted			

Therefore, the construct of Policy and strategy factors for the final measurement model had satisfied all the acceptable cut-off values as recommended in the fitness indexes (Awang, 2014; 2015).

4.2.8 Quality Academic Professional Development Measurement Model

In the construct of the quality academic professional development measurement model, factor loading for each item, squared multiple correlation (R2) and fitness indexes for each of the items observed were analysed. The essence was to identify whether the level of acceptance for every index is achieved in the Quality Academic Professional Development construct. The construct of the quality academic professional development measurement model has a total of eight indicator items.

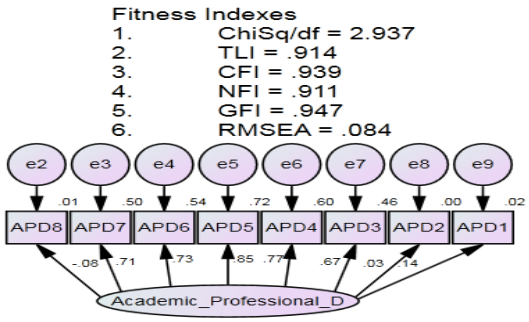

Fig. 13 - Initial academic professional development measurement model

Based on the analysis, the required level of NFI, TLI, and GFI were met, but the RMESA and Chisq/def were not achieved as presented in Figure 13; hence, there is a need for modification. Therefore, the new measurement model re-specified and final measurement model for Quality Academic Professional Development construct were conducted, as presented in Figure 14. In this case, the researcher examined the Modification Indices (MI) and checked the manifest measurement error to ascertain which of them demonstrates high regression weights. Afterwards, the covariance was made between measurement errors having highest Modification Indices (MI). After checking the factor loading of items and ensure that more than 0.6, the researcher checked the Modification Indices (MI). According to Byrne (2013); and Hair et al. (2006), the modification indices that show high covariance and demonstrate high regression weights are potential manifests item to covary. The APD1, APD2 and APD8 have low factor loadings and they were deleted. Thus, after fixing these problematic items, the measurement model was re-run, as recommended. The final CFA model is depicted in Figure 14.

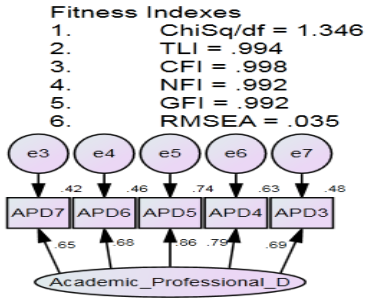

Fig. 14 - Final academic professional development measurement model

Based on the analysis, the results of these fitness indices relative to the recommended values show that all these fit indices for the model 'Quality Academic Professional Development achieved the recommended values, as shown in Table 10. Further analysis of the model 'Quality Academic Professional Development' for other fitness criteria (such as the factor loading and the squared multiple correlation) also reveals that all the factor loadings and the entire squared multiple correlations achieved the required level (≥ 0.60 for factor loading and ≥ 0.20 for squared multiple correlation).

Table 10 - Academic professional development measurement model fitness index

Fitness Index	Threshold value	Generated Value	Comments
Chisq/df	Chisq/df < 3	1.364	The required level is achieved
TLI	TLI > 0.9 means satisfactory	0.994	The required level is achieved
CFI	CFI > 0.9 means satisfactory fit.	0.998	The required level is achieved
NFI	NFI > 0.80 suggests a good fit	0.992	The required level is achieved
GFI	GFI > 0.80 suggests a good fit.	0.992	The required level is achieved
RMSEA	RMSEA < 0.08 mediocre fit.	0.035	The required level is achieved
Model is accepted			

Therefore, the construct of the final measurement model the Quality Academic Professional Development had satisfied all the acceptable cut-off values as recommended in the fitness indexes (Awang, 2014; 2015).

4.2.9 Uni-Dimensionality Assessment for All the Constructs

Prior to the validity analysis, every measurement model construct in the research assessment model is checked for its uni-dimensionality and statistical reliability. The comparative fix index (CFI) is used to assess the uni-dimensionality of all constructs in this research. A summary of the CFI values for all the constructs of the research assessment model presented in the Table 11, the computed values above 0.90. Essentially, all the values were above the recommended value of 0.90 (Hair et al., 2011; Awang, 2014) which implied that uni-dimensionality is not violated. Further, Awang (2015) noted that uni-dimensionality is achieved when the measuring items in every construct of the research have acceptable factor loadings. In this research, all the latent constructs' items have an acceptable factor loading greater than the recommended value of 0.6 in all model constructs. Therefore, the assumption on the uni-dimensionality is not violated in any of the research construct.

Table 11 - Measurement model Uni-dimensionality and reliability scores

No	Constructs factors	CFI scores (uni-dimensionality)
1	Design of teaching plan	0.966
2	Teaching skills	0.986
3	Communication skills	0.964
4	Technological factors	0.977
5	The expertise skill in the lesson content	0.984
6	Individual and occupational identity	0.972
7	Policy and strategy	0.998
8	Quality academic professional development	0.998

4.2.10 Convergent Validity Analysis

Convergent validity is referred to as the factor loading scores from the items of measurement scale in a latent construct which should be correlated and significant. Such items are supposed to measure the same construct and if their factor loading scores are greater than 0.5, and NFI values were above 0.9 then the convergent requirement sustained (Awang, 2014; 2015). In this research, factor loading of all the items in the final measurement model and Bentler-Bonett coefficient (NFI) are used for the assessment of the convergent validity (Hair et al., 2011). The results of the final measurement models' items and NFI values were above 0.9 as earlier presented. Table 12 shows the extract of the residual number of items in the final measurement model of the constructs and their respective NFI values.

Table 12 - Measurement Model NFI values

No	Research constructs	NFI scores (Convergent validity)
1	Design of teaching plan factors.	0.941
2	Teaching skills factors	0.976
3	Communication skills factors	0.943
4	Technological factors	0.964
5	The expertise skill in the lesson content factors	0.971
6	Individual and occupational identity	0.954
7	Policy and strategy factors	0.983
8	Quality academic professional development	0.992

4.3 CFA for the Entire Measurement Models

The initial CFA model for all constructs in order to check the redundancy between the constructs. The independent construct 'Design of teaching plan factors'; Teaching skills factors; Communication skills factors; Technological factors; The expertise skill in the Lesson content factors; Individual and occupational identity; Policy and strategy factors and the dependent construct is 'Quality Academic Professional Development'. In a bid to investigate these constructs (independent and dependent constructs) are not redundant to each other; Figure 15 depicts the measurement model which fit well based on indexes as shown in Table 13.

Table 13 - Fitness indexes for all the measurement models

Fitness Index	Threshold value	Generated Value	Comments
Chisq/df	Chisq/df ≤ 3	1.431	The required level is achieved
TLI	TLI ≥ 0.9 means satisfactory	0.923	The required level is achieved
CFI	CFI ≥ 0.9 means satisfactory fit.	0.930	The required level is achieved

NFI	NFI ≥ 0.80 suggests a good fit	0.803	The required level is achieved
GFI	GFI ≥0.80 suggests a good fit.	0.818	The required level is achieved
RMSEA	RMSEA ≤ 0.08 mediocre fit.	0.040	The required level is achieved
Model is accepted			

The final CFA model is depicted in Figure 15. Based on fitness indexes as shown in Table 13, and Figure 15, the CFA model fit well. The TLI and CFI were above 0.90, and NFI, and GFI were above 0.80 the ChiSq/df < 3, and the RMSEA was below 0. 08. Inspecting the results of these fitness indices for final CFA relative to the recommended values, all these fit indices for the measurement model achieved the recommended values as indicated in Table 13.

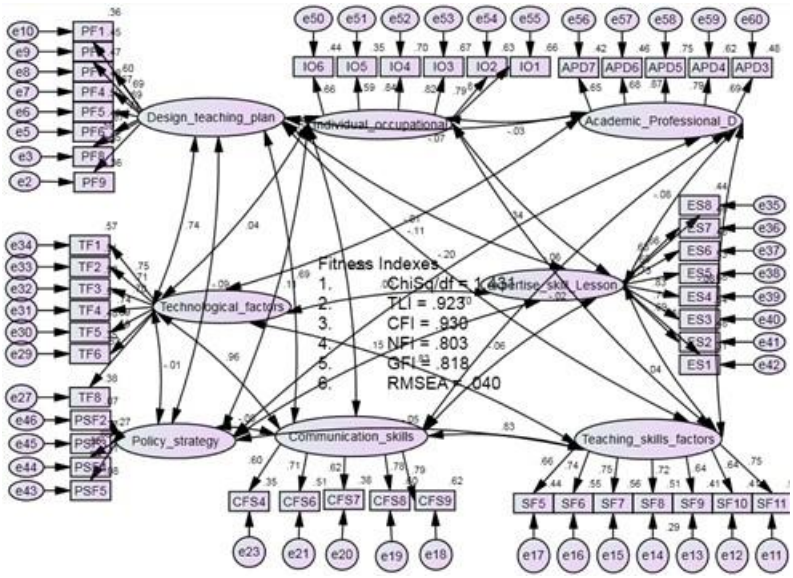

Fig. 15 - Initial structural model

4.3.1 Reliability and Validity of The Entire Measurement Models

In this study, construct validity examined by analysing both convergent validity and discriminant validity. According to Pallant (2011) the construct validity is explored by investigating its relationship with other constructs, both related (convergent validity) and unrelated (discriminant validity). According to Hair et al. (2010) Average Variance Extracted (AVE) should be 0.5 or greater to suggest the adequate convergent validity, and AVE estimates for two factors also should be greater than the square of the correlation between the two factors to provide evidence of discriminant validity (Hair et al., 2010). According to Fornell and Larcker (1981) if the AVE is higher than the square of the correlation coefficient among the constructs, it can be asserted that discriminant validity is satisfied. In addition, in this study the reliability assessed through construct reliability (CR ≥ 0.60). Table 14 shows the two measures of reliability of a measurement model, construct reliability (CR), and Average Variance Extracted (AVE).

Table 14 - Reliability of the entire measurement models

Nos	Construct	CR (≥ 0.6)	AVE (≥ 0.5)
1	Design of teaching plan factors.	0.749	0.570
2	Teaching skills factors	0.826	0.636
3	Communication skills factors	0.675	0.507
4	Technological factors	0.872	0.536
5	The expertise skill in the lesson content factors	0.800	0.613
6	Individual and occupational identity	0.736	0.555
7	Policy and strategy factors	0.713	0.505
8	Quality academic professional development	0.721	0.627

Table 15 demonstrates the discriminant validity. The diagonal values (in bold) shown in Table 15 are the square root of AVE, while the other values are the correlation between the respective constructs. The discriminant validity is achieved when a diagonal value is higher than the values in its row and column (Fornell and Larcker, 1981).

Table 15 - The discriminant validity

Construct	1	1	3	4	5	6	7	8
1	**(0.655)**							
2	0.122	**(0.797)**						
3	0.291	0.295	**(0.754)**					
4	0.271	0.098	0.218	**(0.712)**				
5	0.182	0.085	0.154	0.152	**(0.744)**			
6	0.053	0.516	0.189	0.128	0.164	**(0.782)**		
7	0.120	0.145	0.148	0.114	0.009	0.069	**(0.732)**	
8	0.295	0.122	0.154	0.096	0.154	0.098	0.218	**(0.714)**

From the foregoing, convergent validity for all the constructs in this research satisfied the acceptability requirement. The satisfactory outcome of the research construct's reliability and validity, thus indicate the confidence for the progression to the next stage of multivariate analysis.

4.4 Confirmatory Factor Analysis on Structural Model

After the uni-dimensionality, reliability and validity of the research constructs were ascertained, the next stage of analysis model is the entire constructs into a structural equation model using Analysis of Moment Structure (AMOS). The independent and dependent variables in the research assessment framework were arranged. The connection between each construct is linked with an arrow in the hypotheses' direction as presented in Figure 16. The fitness indices for the structural measurement models are presented in the Table 16, which shows the realization of the acceptable level of goodness-of-fitness indexes.

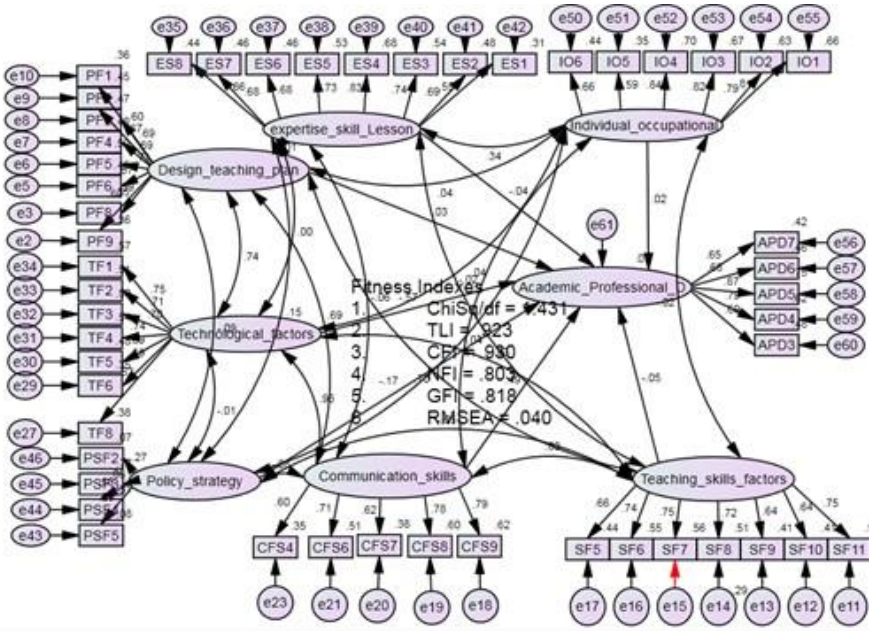

Fig. 16 - Final structural model

Structural model presents the standardized regression coefficient for the entire research constructs. The final structural measurement model provides the results of the analysis of the causal effect (impact) for the multiple constructs in the path diagram. First, the fitness indexes for the structural model which reflect how fit is the hypothesised model with the data at hand was observed and it was found to be satisfactory within the established acceptable level of fitness indexes (Hair et al., 2011; Awang, 2015). The standard regression weights indicated the estimate of beta coefficient, which measures the impacts of the main constructs, exogenous variables (teaching quality factors) and endogenous variable (professional development of academics at UAE HEIs).

As shown in Figure 16, the standardized regression coefficients with its R^2 equal 0.69. The Analysis Moment of Structures (AMOS) used for the structural equation modelling in this research normally produced two types of text outputs: standardized regression weights and unstandardized regression weights for the path analysis. The standardized

regression weight is adopted to explain the relationship among the entire constructs in the research framework, and subsequently for testing the hypotheses in the research as it is recommended to be better due to the ease of interpretation (Awang, 2015). The criteria for evaluating structural model include squared multiple correlations (R2) and path co-efficient (β) of each path. According to Cohen (1994) R^2 of endogenous can be assessed as substantial ($R^2 \geq 0.26$); moderate ($R^2 \geq 0.13$); and small ($R^2 \geq 0.02$).

From Figure 16, it shows that R^2 of the endogenous latent variable (professional development of academics at UAE HEIs) is 0.69, which shows that developed model has substantial explaining power. In assessing the path co-efficient, β value of all structural paths is compared, in which higher the path co-efficient indicate the significant effect on endogenous latent variable.

Table 16 - Structural model fitness indexes

Name of Index	Level of Acceptance	Index Value	Comments
Chisq/df	Chisq/df ≤ 3	1.431	The required level is achieved
TLI	TLI ≥ 0.9 means satisfactory	0.923	The required level is achieved
CFI	CFI ≥ 0.9 means satisfactory fit.	0.930	The required level is achieved
NFI	NFI ≥ 0.80 suggests a good fit	0.803	The required level is achieved
GFI	GFI ≥0.80 suggests a good fit.	0.818	The required level is achieved
RMSEA	RMSEA ≤ 0.08 mediocre fit.	0.040	The required level is achieved
Model is accepted			

Hence, Figure 16 presents the final measurement model for entire research constructs, which shows perfect compliance with the goodness-of-fitness for the structural Model.

4.5 Path Analysis on the Structural Model

Structural model assessment also examined the direct relationships of the seven quality factors and the quality of academic professional development, which are represented by the seven hypotheses. The results of the tested hypotheses are presented in Table 4.22, consisting of the direct relationship of the seven teaching quality factors on the quality of professional development of academics at UAE HEIs.

Table 17 - Results of hypothesis testing (direct relationship)

Hypothesis	Path	CR	P-value (<0.05)	Decision
H1	DTPF→QAPD	11.660	***	Supported
H2	TSF→QAPD	2.154	.024	Supported
H3	CSF→QAPD	2.724	.006	Supported
H4	ESF→QAPD	2.084	.037	Supported
H5	IQIF→QAPD	1.371	.170	Not Supported
H6	PSF→QAPD	1.340	2.32	Not Supported
H7	TF→QAPD	2.406	.016	Supported

Note: * p < 0.05; ** p < 0.01; *** P< 0.001

Based on the findings presented in Table 17, the results of relationships between the exogenous and endogenous variables are as follows:

1. The results of the research shows that the design plan (p = *** < 0.05) is significant and has a positive relationship with the quality of academic professional development. Therefore, the H1 is supported, indicating that the design of teaching plan has a significant impact on the quality of academic professional development. for higher education of UAE.
2. The result of research shows that teaching skills (p = 0.024 < 0.05) is significant and have direct effect on Academics Professional Development (APD). Therefore, H2 is supported, indicating that the teaching skills has a significant impact on the quality of academic professional development for higher education of UAE.
3. The result of research shows that communication skills (p = 0.006 < 0.05) is significant and have direct effect on Academics Professional Development (APD). Therefore, H3 is supported, indicating that the communication skills have a significant impact on the quality of academic's professional development for higher education of UAE.
4. The result of research shows that expertise skills in the lesson plan (p = 0.037 < 0.05) is significant and have direct effect on Academics Professional Development (APD).. Therefore, H4 is supported, indicating that the

expertise skills in the lesson plan has a significant impact to the quality of academics professional development for higher education of UAE.

5. The result of research shows that individual and occupational identity ($p = 0.176 < 0.05$) is not significant on Academics Professional Development (APD). Therefore, H5 is not supported, indicating that the individual and occupational identity does not have significant impact on the quality of academics' professional development for higher education of UAE.
6. The result of research shows that policy and strategy ($p = 2.32 < 0.05$) is not significant on Academics Professional Development (APD). Therefore, H6 is not supported, indicating that the policy and strategy does not have significant impact to the quality of academics' professional development for higher education of UAE.
7. The result of research shows that technology ($p = 0.016 < 0.05$) is significant and have direct effect on Academics Professional Development (APD). Therefore, H7 is supported, indicating that technology has a significant impact to the quality of academics' professional development for higher education of UAE.

To sum up, there are five teaching quality factors that have significant direct affect to the quality of academics' professional development (APD) in HEIs of UAE are the i) design of teaching plan, ii) teaching skills, iii) communication skills, iv) expertise skill in the lesson content, and v) technology. While, there are two teaching quality factors do not have significant relationship with quality academic professional development are: i) individual and occupational identity and ii) policy and strategy.

5. Conclusion

This chapter presents the data analysis of the study by explaining data analysis using CFA model; the use of a structural equation modelling approach utilizing AMOS. Structural equation modelling was conducted in two stages, the measurement model and the structural model. In the first stage, the fit of each measurement model was assessed by using a CFA to make sure that each one was uni-dimensional. At this stage the assessment of the measurement model was made with reference to the following pattern of results: (1) indicators specified to measure a proposed underlying factor all have relatively high standardized loadings; (2) estimated correlations between the factors were not higher than 0.85; (3) the modification indices that show high covariance and demonstrate high regression weights were deleted; and (4) the overall fitness indices suggest acceptance of the model.

The modified measurement model provided adequate fit to the data and all indicators were highly loaded on their specified factors. Each factor construct was then tested for reliability and validity. In regard to reliability, Cronbach alpha and CR were examined. Results obtained indicated that all constructs were reliable. In addition, in order to confirm the validity for each construct, convergent and discriminant validity were also assessed. Based on the seven hypothesis that framed this research, five hypotheses were supported, while two hypotheses were rejected.

Acknowledgement

The authors would like to thank the University for allowing to conduct this research.

References

Abubakar, N. J., and Freeman, E., 2019. Modeling total quality management framework for higher education institutions in Ghana. In: 2019 International Conference on Computing, Computational Modelling, and Applications (ICCMA), IEEE, pp. 87-878.

Al-Hashmi, H. N., 2002. The key elements which have influenced faculty members' understanding and attitudes towards the use of educational technology in higher education with particular reference to Sultan Qaboos University, Oman. Doctoral Dissertation, University of Exeter.

Al-Rabiey, S. H. S., 2002. Implementation of instructional technology in the colleges of education in Oman. The University of Manchester, United Kingdom.

Avidov-Ungar, O., and Reingold, R., 2018. Israeli Ministry of Education's district managers' and superintendents' role as educational leaders - Implementing the new policy for teachers' professional development. International Journal of Leadership in Education, 21(3), pp. 293-309.

Awang, Z., 2014. A handbook on SEM for academicians and practitioners: The step by step practical guides for the beginners. Bandar Baru Bangi, MPWS Rich Resources.

Awang, Z., 2015. SEM made simple. A gentle approach to learning structural equation modeling. Selangor: MPWS Rich Publication.

Ballantyne, R., Borthwick, J., and Packer, J., 2000. Beyond student evaluation of teaching: Identifying and addressing academic staff development needs. Assessment and Evaluation in Higher Education, 25(3), pp. 221-236.

Barnard, S., Mallaband, B., and Leder Mackley, K., 2019. Enhancing skills of academic researchers: The development of a participatory threefold peer learning model. Innovations in Education and Teaching International, 56(2), pp. 173-183.

Bollen, K. A., Harden, J. J., Ray, S., and Zavisca, J., 2014. BIC and alternative Bayesian information criteria in the selection of structural equation models. Structural Equation Modeling: A Multidisciplinary Journal, 21(1), pp. 1-19.

Byrne, B. M., 2013. Structural equation modeling with Mplus: Basic concepts, applications, and programming. UK: Routledge.

Cavazos, A. G., Hebbard, M., Hernández, J. E., Rodriguez, C., and Schwarz, G, 2018. Advancing a transnational, transdisciplinary, and translingual framework: A professional development series for teaching assistants in writing and Spanish programs. Across the Disciplines: A Journal of Language, Learning, and Academic Writing, 15(3), pp. 1-10.

Collinson, C., & Penketh, C. (2010). 'Sit in the corner and don't eat the crayons': postgraduates with dyslexia and the dominant 'lexic'discourse. Disability & Society, 25(1), 7-19.

DKHD, 2012. Higher education. [Online] Available at: https://www.khda.gov.ae/CMS/WebParts/TextEditor/Documents/HELandscape2012_English.pdf [Accessed on 15 June 2020].

Farrell, T. S. C., 2008. Reflective practice in the professional development of teachers of adult English language learners. CAELA NETWORK. Available at: http://www.cal.org/caelanetwork/pdfs/ReflectivePracticeFinalWeb.pdf [Accessed on 24 January 2021].

Field, A., 2009. Discovering statistics using SPSS. USA: Sage Publications.

Fishman, B. J., Marx, R. W., Best, S., and Tal, R. T., 2003. Linking teacher and student learning to improve professional development in systematic reform. Teaching and Teacher Education, 19(6), pp. 643-658.

Fornell, C., and Larcker, D. F., 1981. Evaluating structural equation models with unobservable variables and measurement error. Journal of Marketing Research, 18(1), pp. 39-50.

Hair J. J. F., Black, W. C., Babin, B. J., Anderson, R. E., and Tatham, R. L., 2006. Multivariate data analysis. Upper Saddle River: Auflage.

Hair, J. F., Ringle, C. M., and Sarstedt, M., 2011. PLS-SEM: Indeed a silver bullet. Journal of Marketing Theory and Practice, 19(2), pp. 139–151.

Hair, J., Anderson, R., Tatham, R., and Black, W., 2010. Multivariate data analysis, 7th ed., USA: Prentice Hall.

Heras-Saizarbitoria, I., and Boiral, O., 2015. Symbolic adoption of ISO 9000 in small and medium-sized enterprises: The role of internal contingencies. International Small Business Journal, 33(3), pp. 299-320.

Hooper, D., Coughlan, J., and Mullen, M., 2008. Evaluating model fit: A synthesis of the structural equation modelling literature. In: 7th European Conference on Research Methodology for Business and Management Studies, pp. 195-200.

Karagiorgi, Y., and Symeou, L., 2016. Teacher professional development in Cyprus: Reflections on current trends and challenges in policy and practices. Journal of In-Service Education, 32(1), pp. 47-61.

Kornevs, M., Hauge, J. B., and Meijer, S., 2019. Gamification of a procurement process for professional training of public servants. International Journal of Serious Games, 6(2), pp. 23-37.

Kourkoutas, E., Hart, A., Graaf, U., and Kassis, W., 2017. A resilience-based program to promote reflective and inclusive teaching practices in Greece during austerity. In: Teacher Professional Knowledge and Development for Reflective and Inclusive Practices, Routledge, and pp. 168-178.

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. Educational and Psychological Measurement, 30(3), 607–610.

López, I. C., and Larrea, M. L., 2017. Professional development and reflective practice as tools to improve teaching practice. Revista de la Facultad de Contaduría y Ciencias Administrativas, 1(1), pp. 117-125.

Maassen, P., Nerland, M., and Yates, L., eds., 2018. Reconfiguring knowledge in higher education, 50th ed., In: M., Malik, and G., Fatima, 2017. E-Learning: Students' Perspectives about Asynchronous and Synchronous Resources at Higher Education Level. Bulletin of Education and Research, 39(2), pp. 183-195.

McCormack, B., and McCance, T., eds., 2016. Person-centred practice in nursing and health care: Theory and practice. John Wiley and Sons.

McInnis, E. Y., Cornelious, L. F., Murphy, J. L., Prince, D., and Yu, W. C. W., 2021. Mathematics teachers' perceptions of effective instructional practices and engaging the iGeneration. International Journal of Teacher Education and Professional Development (IJTEPD), 4(2), pp. 1-18.

O'Sullivan, K., 2016. Education quality in the UAE-factors in creating a knowledge-based economy. International Journal of Research and Current Development.

Onderi, H., and Croll, P., 2008. In- service training needs in an African context: a study of headteacher and teacher perspectives in the Gucha District of Kenya. Journal of in- service education, 34(3), pp. 361-373.

Owen, S. M., 2015. Teacher professional learning communities in innovative contexts:'ah hah moments','passion'and 'making a difference'for student learning. Professional Development in Education, 41(1), pp. 57-74.

Pallant, J. 2011. Survival manual. A step by step guide to data analysis using SPSS, 4th ed., Routledge.

Raji, B., 2019. Significance and challenges of computer assisted education programs in the UAE: A case study of higher learning and vocational education. Education and Information Technologies, 24(1), pp. 153-164.

Ramayah, T., and Lee, J. W. C., 2012. System characteristics, satisfaction and e-learning usage: a structural equation model (SEM). Turkish Online Journal of Educational Technology-TOJET, 11(2), pp. 196-206.

Rose, R. C., and Kumar, N., 2006. Get educators to absorb the power of HRD in molding quality education. Performance Improvement, 45(9), pp. 32-36.

Ruben, B. D., 2018. Quality in higher education. Routledge.

Shareef, K., 2008. Mentoring relationships for collaborative professional development practices in Maldivian primary schools. Master thesis, University of Waikato, Hamilton, New Zealand. [Online] Available at: http://resedarchcommons.waikato.ac.nz [Accessed on 6 January 2020].

Tabachnick, B. G., Fidell, L. S., and Ullman, J. B., 2007. Using Multivariate Statistics, 5th ed., Boston, MA: Pearson, pp. 481-498.

Vázquez, V. P., and Ellison, M., 2018. Examining teacher roles and competences in content and language integrated learning (CLIL). Linguarum Arena: Revista de Estudos em Didática de Línguas da Universidade do Porto, 4, pp. 65-78.

Zuber-Skerritt, O., 1992. Professional development in higher education: A theoretical framework for action research. London: Kogan Page