


**VALIDATION OF A SCALE FOR THE MEASUREMENT OF EMPLOYEE COMPETENCY IN
RELATION TO SUCCESSION PLANNING AMONGST ADMINISTRATORS IN HIGHER
EDUCATION INSTITUTIONS**

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ARTICLE INFO	ABSTRACT
<p>Article history:</p> <p>Received 31 January 2023</p> <p>Accepted 18 April 2023</p>	<p>Purpose: This paper examines the validity and reliability of an instrument to evaluate employee competency in the context of succession planning using a sample of administrators within the 48 to 54 grades in Malaysian public universities.</p>
<p>Keywords:</p> <p>Employee Competency; Succession Planning Exploratory Factor Analysis; Confirmatory Factor Analysis; Talent Management; Higher Education Institution.</p> <div data-bbox="172 1153 478 1400" style="text-align: center;">  </div>	<p>Theoretical framework: Shaping the qualities and competencies of university administrators can serve as a model of competent leadership for the sustainability of succession planning for higher education institutions.</p> <p>Design/methodology/approach: Systematic random sampling was used for data collection using questionnaires, including pilot studies and subsequent field studies. The survey was administered to 430 respondents from the administrators of 20 public universities. The study conducted an exploratory factor analysis (EFA) using the pilot study data (n = 102) to identify potential factor structures. Confirmatory factor analysis (CFA) using field study data (n = 328) was conducted to confirm the construct measurement model.</p> <p>Findings: The EFA and CFA validation processes suggested that only 10 modified items with 4 components remained to achieve a better fit model: Interpersonal (IP), Personal Effectiveness (PE), Teamwork (TW), and Self-Development (SD). All composite reliability (CR) measures for these 4 components exceeded the required value of 0.6. Since the values of these indices fall within the range of their respective cutoff values, the model meets the goodness-of-fit criterion: RMSEA = 0.070, GFI=0.955, CFI = 0.953, TLI = 0.926, and a normalized chi-square = 2.605. According to the study, the instrument is valid and reliable for assessing the components of the employee competency model.</p> <p>Research, Practical & Social implications: The scale validated in this study could be used by human resource managers in public universities as a tool to better</p>

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understand the belief systems of their employees. It could help them make an informed decision that will enable them to provide competent administrators for succession planning.

Originality/value: This study is a catalyst to assess and highlight the current status and impact of employee competency on succession planning in Malaysian higher education institutions.

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VALIDAÇÃO DE ESCALA PARA MEDIÇÃO DA COMPETÊNCIA DOS FUNCIONÁRIOS EM RELAÇÃO AO PLANEJAMENTO DE SUCESSÃO ENTRE ADMINISTRADORES DE INSTITUIÇÕES DE ENSINO SUPERIOR

RESUMO

Objetivo: Este artigo examina a validade e a confiabilidade de um instrumento para avaliar a competência dos funcionários no contexto do planejamento de sucessão usando uma amostra de administradores de 48 a 54 anos em universidades públicas da Malásia.

Referencial teórico: Moldar as qualidades e competências dos administradores universitários pode servir como modelo de liderança competente para a sustentabilidade do planejamento sucessório de instituições de ensino superior.

Desenho/metodologia/abordagem: Amostragem aleatória sistemática foi utilizada para coleta de dados por meio de questionários, incluindo estudos-piloto e posteriores estudos de campo. A pesquisa foi aplicada a 430 respondentes dos administradores de 20 universidades públicas. O estudo conduziu uma análise fatorial exploratória (EFA) usando os dados do estudo piloto ($n = 102$) para identificar estruturas fatoriais potenciais. A análise fatorial confirmatória (CFA) usando dados de estudo de campo ($n = 328$) foi realizada para confirmar o modelo de medição de construção.

Resultados: Os processos de validação EFA e CFA sugeriram que apenas 10 itens modificados com 4 componentes permaneceram para alcançar um modelo de melhor ajuste: Interpessoal (IP), Eficácia Pessoal (PE), Trabalho em Equipe (TW) e Autodesenvolvimento (SD). Todas as medidas de confiabilidade composta (CR) para esses 4 componentes excederam o valor exigido de 0,6. Como os valores desses índices estão dentro da faixa de seus respectivos valores de corte, o modelo atende ao critério de adequação: $RMSEA = 0,070$, $GFI=0,955$, $CFI = 0,953$, $TLI = 0,926$ e um qui-quadrado normalizado = 2.605. De acordo com o estudo, o instrumento é válido e confiável para avaliar os componentes do modelo de competência do empregado.

Implicações de pesquisa, práticas e sociais: A escala validada neste estudo pode ser usada por gerentes de recursos humanos em universidades públicas como uma ferramenta para entender melhor os sistemas de crenças de seus funcionários. Isso pode ajudá-los a tomar uma decisão informada que lhes permita fornecer administradores competentes para o planejamento da sucessão.

Originalidade/valor: Este estudo é um catalisador para avaliar e destacar o status atual e o impacto da competência do funcionário no planejamento de sucessão em instituições de ensino superior da Malásia.

Palavras-chave: Competência do Funcionário, Planejamento Sucessório Análise Fatorial Exploratória, Análise Fatorial Confirmatória, Gestão de Talentos, Instituição de Ensino Superior.

VALIDACIÓN DE UNA ESCALA PARA LA MEDICIÓN DE LA COMPETENCIA DE LOS TRABAJADORES EN RELACIÓN CON LA PLANIFICACIÓN DE LA SUCESIÓN ENTRE ADMINISTRADORES EN INSTITUCIONES DE EDUCACIÓN SUPERIOR

RESUMEN

Propósito: Este documento examina la validez y confiabilidad de un instrumento para evaluar la competencia de los empleados en el contexto de la planificación de la sucesión usando una muestra de administradores dentro de los grados 48 a 54 en universidades públicas de Malasia.

Marco teórico: Dar forma a las cualidades y competencias de los administradores universitarios puede servir como modelo de liderazgo competente para la sostenibilidad de la planificación de la sucesión de las instituciones de educación superior.

Diseño/metodología/enfoque: Se utilizó un muestreo aleatorio sistemático para la recopilación de datos mediante cuestionarios, incluidos estudios piloto y estudios de campo posteriores. La encuesta fue administrada a 430 encuestados de los administradores de 20 universidades públicas. El estudio realizó un análisis factorial exploratorio (AFE) utilizando los datos del estudio piloto ($n = 102$) para identificar posibles estructuras factoriales.

Se llevó a cabo un análisis factorial confirmatorio (CFA) utilizando datos de estudios de campo ($n = 328$) para confirmar el modelo de medición del constructo.

Hallazgos: Los procesos de validación de EFA y CFA sugirieron que solo quedaban 10 ítems modificados con 4 componentes para lograr un modelo de mejor ajuste: Interpersonal (IP), Eficacia personal (PE), Trabajo en equipo (TW) y Autodesarrollo (SD). Todas las medidas de confiabilidad compuesta (CR) para estos 4 componentes excedieron el valor requerido de 0.6. Dado que los valores de estos índices se encuentran dentro del rango de sus respectivos valores de corte, el modelo cumple con el criterio de bondad de ajuste: RMSEA = 0,070, GFI = 0,955, CFI = 0,953, TLI = 0,926 y un chi-cuadrado normalizado = 2.605. Según el estudio, el instrumento es válido y confiable para evaluar los componentes del modelo de competencias de los empleados.

Implicaciones de investigación, prácticas y sociales: la escala validada en este estudio podría ser utilizada por los gerentes de recursos humanos en universidades públicas como una herramienta para comprender mejor los sistemas de creencias de sus empleados. Podría ayudarlos a tomar una decisión informada que les permita proporcionar administradores competentes para la planificación de la sucesión.

Originalidad/valor: este estudio es un catalizador para evaluar y resaltar el estado actual y el impacto de la competencia de los empleados en la planificación de la sucesión en las instituciones de educación superior de Malasia.

Palabras clave: Competencia del Empleado, Planificación de Sucesión Análisis Factorial Exploratorio, Análisis Factorial Confirmatorio, Gestión del Talento, Institución de Educación Superior.

INTRODUCTION

Higher education in Malaysia is projected to become incredibly challenging, given the anticipated changes in technology, population, economics, student expectations, and federal funding (Ahmad et al., 2020; Bano, 2018). Universities need to practice the triangle of knowledge concept that covers research, education, and innovation (Ahmad et al., 2020). In fact, all universities had to change their strategies to achieve sustainable development in its various dimensions to meet the demands of (stakeholders) that put significant pressure on institutions (Mahdi & Abass, 2022). Sirat et al. (2012) highlighted questions regarding leadership issues in Malaysia's public universities, particularly at the highest administration levels, and how outsiders and insiders see the administrative system. Succession planning is important to ensure the university leader manages future needs. In line with the Malaysia Education Blueprint 2015–2025 (Higher Education; Ministry of Education Malaysia [MOE], 2015), which emphasizes human capital, universities play a crucial part in developing and implementing competencies for the entire workforce to produce excellent talent.

Concurrently, demographic changes will affect the readiness of leaders in higher education institutions (HEIs). The Malaysian workforce is aging, and retirement issues are arising, particularly among the baby boomer generation. Malaysia is experiencing rapid demographic and social structural changes. Currently, the number of Malaysians aged 60 years and above is estimated to be 3 million or 9% of the total population (Department of Statistics Malaysia [DOSM], n.d.).

The current population estimate (DOSM, n.d.) shows that by 2030 Malaysia will become an aging nation; 15% of its population will comprise people aged 60 and above. Gradual changes in workforce demographics will affect turnover, especially among civil servants with high retirement rates. In the public sector, in 2019, 46,283 new retirees were approved, while the total number of retirees was 837,484 (Public Service Department Malaysia, n.d.). These demographic trends may uniquely affect higher education tenure-track faculty (McChesney & Bichsel, 2020). Thus, having a succession plan is critical to extending the institution's lifespan and ensuring sustainable growth and performance of the organization (Ahmad et al., 2020).

The lack of qualified candidates in the talent pipeline for leadership roles in HEIs renders these issues worse (Cavanaugh, 2017; Inside Higher Ed, 2016). Moreover, succession planning is difficult when the lower management staff departs from an organization because it could lead to the lack of competency required for specific positions (Bano, 2020). The problem is ineffective succession planning practices where the potential leader needs to be more competent to fill vacant positions in the university. Thus, succession planning requires a qualified successor in the university's leadership position (Bano, 2020; Mehrabani & Mohamad, 2013; Mohamed Jais et al., 2021; Santora & Bozer, 2015).

In relation to this issue, therefore the objective of the study to examines how employee competency affects succession planning efficiency at Malaysian HEIs. There are currently 20 public universities in Malaysia, according to the Ministry of Higher Education (MOHE, n.d.). As a result, this research article aims to determine how succession plans for administrative officers relate to employee competency at public universities.

LITERATURE REVIEW

Succession planning

Succession planning exposes the organization to risks by placing leaders in challenging circumstances for which they are not completely qualified to hold the position (Barton, 2019; Tietjen-Smith et al., 2020). Therefore, it is critical to train and retain potential leaders to keep those human resources on board and resist outside pressure to quit their companies (Heinen & O'Neill, 2004). There also must be a strong synergy between training and development plans to support the development of leadership competencies that demonstrate a strong commitment to the organization (Titin et al., 2022). Succession plans can provide firms with a plan of action when circumstances unexpectedly change if they are established and kept up to date. Therefore,

it is now essential for all companies and organizations to use strategies such as succession planning and job enrichment to attract and retain competent personnel (Shrivastava, 2022).

Succession planning is variedly described. The best way to define succession planning is a proactive and consistent set of specific procedures with deliberate and systematic effort made by the leadership of organizations to recruit, develop, and retain people with a range of leadership competencies capable of implementing current and future organizational goals (Leibman et al., 1996; Niknamian, 2020; Phillips, 2020; Rothwell, 2015). Hirsh (2000) asserted that the succession plan, which involves identifying and selecting one or more individuals as successors with the provision of systematic learning development and a career plan for the successor, focuses on filling strategic positions in the organization. The key to future organizational success is conducting the necessary gap analysis and building professional competencies. Planning for succession is essential for developing new leaders and effectively filling the leadership skills gap (Clayborne et al., 2020). A thorough awareness of future leaders' competencies and areas that require professional development is essential for an effective succession plan strategy (Morris & Laipple, 2015). Besides, organizations may regard the knowledge and abilities of their staff as a valuable resource that costs much money to obtain. Nevertheless, some research has indicated that there have been occasions where certain companies have failed to give succession planning the necessary attention (Berchermann, 2005; Klein & Salk, 2013; Sambrook, 2005; Santora & Bozer, 2015).

Succession management, replacement planning, and talent management are sometimes conflated with or used interchangeably in the literature (Diya & Mansor, 2019; McMurray et al., 2012; Muslim et al., 2012). The lack of clarity surrounding succession planning results from the inconsistent use of these terminologies in the literature. The purpose of replacement planning is to ensure a smooth transition in replacing critical roles when it is uncertain how to fill important positions because the incumbent is no longer around (González, 2010; Kim, 2011). While succession planning is a proactive approach to supplying an organization with a talent surplus by assisting individuals in realizing their leadership potential and carefully considering developmental activities, replacement planning is a reactive method for filling vacancies (Phillips, 2020; Rothwell, 2015). Instead of nominating people as replacements, succession planning should concentrate on developing them. Moreover, the deliberate selection and preparation of successors for all managerial levels of a company is another aspect of succession management (Berke, 2005). Nevertheless, despite having similar definitions, succession planning and talent management are each managed by distinct people. While

succession planning is normally the job of the present leadership, talent management is stated as recruiting and retention techniques used by human resources (Crumpacker & Crumpacker, 2007; Kim, 2011). Furthermore, succession planning is necessary for talent management models (Kim, 2011). In summary, while succession planning and talent management are closely related, the two terms technically have different meanings.

Succession planning is not pre-selection but preparation (Klein & Salk, 2013). The main goal of succession planning is to discover and prepare proper individuals to fill key positions when people resign, retire, transfer, die, or find new opportunities outside the organization. The institutional leadership must also be fully engaged in the succession planning process. Organizations now know that to meet any demand at any time, they need to find and train a pool of high-potential future workers at all levels of the organization (Murray, 2007). For employees to move into a new position and take on more responsibility, the organization should consider creating a leadership pipeline at all levels of staff. Successors' attitudes, traits, and knowledge requirements should be evaluated for the best organizational performance (Campion et al., 2011).

Employee Competency

The word "competency" refers to the observable personality traits of people that result in greater performance (White, 1959). An individual's personality characteristics include a cluster of knowledge, skills, traits, motives, and self-concept (Spencer Jr. & Spencer, 1993), and the same can be nurtured and rejuvenated by human resource development (HRD) activities (de Vos et al., 2015). According to Takey and de Carvalho (2015), competence is the capacity of a person to mobilize, integrate, and transfer information, skills, and resources within themselves to achieve prescribed performance in daily work activities, creating economic and social value for the organization and the individual. In general, competency can be defined as a strategy that explains how a company achieves its objectives and maintains a competitive advantage (Salman et al., 2020).

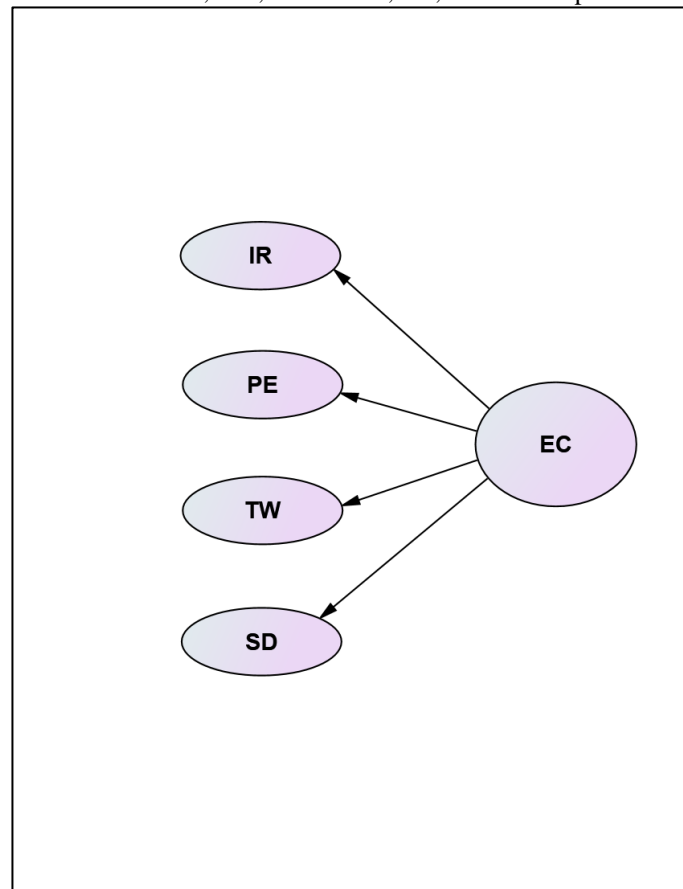
Competency development is aligned with the strategic goals and direction of the organization (Campion et al., 2011; Draganidis & Mentzas, 2006; Ngo et al., 2014). Shippmann et al. (2000) stated that competency is also a framework commonly used by practitioners to implement workforce strategies through the process of selection, development, assessment, succession planning, and change initiatives. Competence is also defined as behaviors that are consistent with the organizational culture and meet the requirements of the position to achieve

the results expected by the organization (Dubois et al., 2004; Sanghi, 2019). This makes it easier to turn an organization's mission and core values into a goal and a set of skills needed by all employees (Audenaert et al., 2014).

Several researchers have examined the concept of competence from different perspectives (Boyatzis, 2008; Phillips, 2020), even though individual-based work is usually the main focus when competency modeling is used in an organization. Nevertheless, there is confusion among practitioners and researchers because the term "competency" is considered ambiguous in various contexts (Le Deist & Winterton, 2005; van der Klink & Boon, 2003). As stated in most of the literature on human resource management, there is a distinction between the emphasis on describing competencies focused on the individual level and the organizational level explained by the strategic management theory (Cummings & Worley, 2008). Meanwhile, Le Deist and Winterton (2005) stated that in contrast to the strategic literature, the HRD literature emphasizes the cultivation of generic competence. Consequently, the essence of competence is addressed by adopting the perspective of sustainable competitive advantage of an organization, which is different from the traditional perspective of improving individual employability (Serim et al., 2014).

Some researchers have noted that the competency model is constantly updated and systematically organized in terms of goals and professional requirements that conform with the organization. However, empirical research is still low and not comprehensively tested (Baczyńska & Wekselberg, 2009). This explains why some researchers and practitioners doubted the competency model. Consequently, it is important to evaluate the validity of the competencies in light of the existing confusion (Barrett & Depinet, 1991; Lawler III, 1996). If the validation process for the competency model is not performed, the assumed employee profile cannot be used as a reliable source of knowledge related to the organizational context (Boyatzis, 1982). The proposed conceptual model is shown in Figure 1.

Figure 1. A proposed conceptual model. EC, Employee Competency; IR, Interpersonal Relations; PE, Personal Effectiveness; TW, Teamwork; SD, Self Development.



Source: prepared by the authors (2021).

MATERIAL AND METHODOLOGY

This study employed several stages, including research instrument adaptation, pretest validation by expert panels, sampling, and data collection. The data collected were subjected to exploratory factor analysis (EFA) to uncover possible components. In later stages, confirmatory factor analysis (CFA) was conducted to evaluate the field data study and determine the reliability and validity of the constructs (Jöreskog, 1969; Loewenthal, 2001; Brown, 2014; Fung et al., 2020). This study focuses on executing EFA and CFA for employee competency construct.

Research Instrument Adaptation

The items on the measuring instrument for the training, individual competency, organizational culture, and succession planning construct among administrative officers were adopted from previous research to meet the requirements of the present study. A pretest and pilot test must be conducted to validate the adapted instrument, particularly when the instrument

in question differs from the population, the culture of the industry, and the scope of the study being conducted (Bahkia et al., 2020; Mahmudul Hoque et al., 2018; Rahlin et al., 2019). Consequently, a dimension might change based on items that have been modified, where the scope of the current study differs from previous studies regarding the field of study, socioeconomic status, and culture of the population (Mohamad et al., 2019).

The perceptions of administrative officers at Malaysian public universities regarding their respective succession planning effectiveness were gathered using a self-administered questionnaire comprising 48 closed-ended items. The research questionnaire comprises two parts. Two constructs were captured by the items in the first section of the questionnaires: training and organizational culture. These two constructs are the independent constructs of the study. Meanwhile, the mediating construct is individual competency. The study also included a dependent construct called succession planning. Items were rated on a 7-point scale, ranging from 1 for strongly disagree to 7 for strongly agree, which was used to present the item scores. The 7-point interval scale gave respondents a wider response option that suits their utmost judgment (Mahmudul Hoque et al., 2018; Wu & Leung, 2017). The assumption of parametric statistical analysis was fulfilled using the interval scale (Awang, 2015; Baistaman et al., 2020). Mode, median, and arithmetic mean (average) are the measures of central tendency for the interval scale, as described by Bougie and Sekaran (2020), which is statistically more meaningful than the nominal and ordinal scales. Meanwhile, range, standard deviation, and variance serve as measures of dispersion.

The second part of the questionnaire deals with the collection of demographic data and information on the respondents mentioned in the study population. The demographic details included gender, age group, university name, the highest level of education, years of working experience, grade of position, and university name in the questionnaire. Once the adaptation and modification of the construct were finalized, they were submitted for review by a panel of experts. In the second phase, the necessary improvements were made based on the experts' feedback.

Pretest Validation by Expert Panel

The instrument's items were thoroughly examined for validity and reliability by experts and practitioners in the particular field. As described by Cooper and Schindler (2014), the extent to which a result accurately captures a concept is called validity, while reliability is the extent to which a measurement is unaffected by random error and a reliable instrument produces

consistent results. According to Rothgeb et al. (2007), practitioners' opinions are crucial to the components' sensitivity, whereas experts' opinions are required to examine and judge perplexing items while computing the variables. Meanwhile, Zikmund et al. (2013) stated that in a pretest, the questionnaire is reviewed by experts to ensure that all the questions are appropriate and that any modifications are incorporated before proceeding further.

In this research, ten external experts and practitioners evaluated the questionnaire during the pretest stage to gauge its content validity, face validity, and criterion validity. The degree to which a measure accurately captures the essence of a certain notion is known as face validity. Meanwhile, content validity, closely related to face validity, concerns whether a measure contains a descriptive set of items to represent a particular notion (Giménez-Espert et al., 2021; Yan et al., 2022). Zikmund (2000) defined criterion validity as the degree of correlation between a measure and other common measures for an exact construct. In the pretest, the questionnaire was reviewed by a senior lecturer and practitioners for face and content validity to ensure that the measurements were appropriate and clear for their intended purpose. The statistics professor assessed criterion validity and determined that the scales used to measure the data were appropriate for statistical analysis. The following factors were presented to the experts for evaluation: (1) the appropriateness of the wording, (2) the clarity of the items, (3) the number of items that require a factor loading value greater than 0.6 to accurately measure the constructs, and (4) the design of the questionnaire. To reduce the number of double-barreled questions, the experts provided useful guidance on compressing and rephrasing some questions. The researcher revised the instrument by making the necessary modifications according to the reviewers' suggestions and critics. A new questionnaire version was later presented to the experts.

Data Collection

The researcher had received research approval from the universities and MOHE prior to the distribution of the questionnaire. The selected respondents received an e-mail and a self-administered questionnaire to record the results. Data for the field and pilot studies were collected using a cross-sectional design. The target respondents for this study were administrative officers (Grades 48 to 54) from 20 public universities in Malaysia. The sampling frame and data were provided via the personnel directories on each university's website and by the human resources departments. The total number of questionnaires returned was 430. Data collection was conducted in two stages using a systematic sampling procedure. Sample A ($n =$

102) was used in stage 1 of EFA, while sample B (n = 328) was used in stage 2 of CFA to assess factor structure and concurrent validity.

Demographic Profile

As shown in Table 1, 430 respondents were involved in this study, including samples A and B. Most of the 186 respondents in the field study (Sample A) are males and 142 females, with 43.3% of the respondents under the 45–49 age group. The percentages of respondents aged 40–44 and 50 years or older are 29.9% and 21.6%. Meanwhile, more than 75% of the employees have a degree, 8.6% have a master’s degree, and 1.8% have a PhD. Finally, in the two main grade positions of employees, 58.5% are in grade 48, and 35.1% are in grade 52.

Table 1: Demographics of respondents (n = 430).

Demographic characteristic	Sample A: Field study data sample (n=328)		Sample B: Pilot data sample (n=102)	
	n	%	n	%
Gender				
Male	186	56.7	63	61.80%
Female	142	43.3	39	38.20%
Age				
<34	0	0	0	0
35-39	17	5.2	12	11.8
40-44	98	29.9		
45-49	142	43.3	68	66.7
>50	71	21.6	22	21.6
Highest education level				
Bachelor	242	73.8	77	75.5
Master	82	25	24	23.5
PhD	4	1.2	1	1
Years of service				
<10	0	0	0	0
11-15	52	15.9		
16-20	162	49.4	16	15.7
21-25	87	26.5	68	66.7
>26	27	8.2	18	17.6
Grade of position				
48	192	58.5	63	61.8
52	115	35.1	38	37.3
54	21	6.4	1	1
Service at present university				
UM	25	7.6	0	0
UKM	15	4.6	2	2
UPM	23	7	4	3.9
USM	14	4.3	2	2
UTM	27	8.2	7	6.9
UiTM	22	6.7	17	16.7
UIA	15	4.6	5	4.9
UMS	21	6.4	6	5.9
UNIMAS	18	5.5	4	3.9
UUM	26	7.9	10	9.8

UMP	3	0.9	19	18.6
UniMAP	9	2.7	2	2
UTeM	17	5.2	9	8.8
UTHM	10	3	4	3.9
UPSI	18	5.5	3	2.9
UniSZA	13	4	3	2.9
UMK	11	3.4	0	0
UMT	17	5.2	2	2
USIM	16	4.9	1	1
UPNM	8	2.4	2	2

Source: data processed by the author, 2022

RESULTS AND DISCUSSION

The analysis procedure was divided into two phases. The EFA was performed on the acquired pilot data in Phase 1 to ascertain the potential components. The study used the EFA to explore and evaluate the usefulness of the items used to measure the construct (Abdul-Rahim et al., 2022; Awang, 2015; Awang et al., 2018). Subsequently, the validity and reliability of the scale were tested in Phase 2 by processing another sample data set with CFA. IBM SPSS Version 25.0 and AMOS Version 24.0 were used for all statistical data analyses.

Phase 1: Exploratory Factor Analysis (EFA)

The pilot study data were used to evaluate the EFA approach on sample A (n = 102). Principal component analysis (PCA) was employed for the extraction process, while varimax was employed for the rotation process variation maximization (varimax; Gaskin & Happell, 2014; Pallant, 2020). The validity of the items was assessed using EFA, and the instrument's reliability was confirmed using item analysis and Cronbach's alpha (Taber, 2018). The factor extraction approach was examined using PCA to determine the number of factors to be kept or removed from the EFA. In addition, varimax rotation was used because it is the most commonly used approach to orthogonal factor rotation and can explain factor analysis (Hair et al., 2010). In this study, the researcher employed the KMO value's level of acceptance above 0.6 to reflect sampling adequacy (Awang, 2012; Bahkia et al., 2020; Rahlin et al., 2019). The results were summarized, where the KMO value of 0.800 (> 0.600) is considered acceptable. The approximate value of the chi-square was 699.765, and the number of degrees of freedom was 105. The significance value of Bartlett's test was 0.000, indicating that the probability is less than 0.05. It indicates that the data can be successfully used in the subsequent factor analysis, as suggested by Tabachnick et al. (2007).

After reducing the number of extracted factors by varimax rotation, they were narrowed down to four factors (Table 2). The Cronbach's alpha for factor 1 is 0.719 (Table 3), signifying

that the reliability of its three components (items C11, C12, and C13) is satisfactory. The loadings for each item ranged from 0.661 to 0.757 on the scale. The component is called Interpersonal (IP). Factor 2 consists of three components (items C4, C5, and C6), with a Cronbach's alpha of 0.844. Factor 3 is called Teamwork (TW) and comprises 4 items (items C7, C8, and C9), with a Cronbach's alpha of 0.811. The loadings of the individual items range from 0.652 to 0.794. The three items in Factor 4 (items C1, C2, and C3) have a Cronbach's alpha of 0.836, which is considerably high. Self-development (SD) is classified for this factor, and the loadings for each item range from 0.726 to 0.869.

Table 2: Rotated component matrix for employee competency construct

		Rotated component matrix ^a					
	Component name	Item label	Item statement	Factor loading			
				1	2	3	4
1	Self-Development (SD)	C1	I could use my knowledge to perform the current task.				0.858
2		C2	I could use my skills to teach other employees.				0.869
3		C3	I have the ability to adapt the changes.				0.726
4	Personal Effectiveness (PE)	C4	I have the ability to influence others.		0.836		
5		C5	I have the ability to cope with stress.		0.867		
6		C6	I have the ability to deal with difficult situations.		0.746		
7	Teamwork (TW)	C7	I can work very effectively in a group setting			0.794	
8		C8	I can contribute valuable insight to a team project.			0.751	
9		C9	I can easily facilitate communication between people			0.652	
10	Interpersonal (IP)	C10	I believe I perform well in job situations following restructuring.	0.540 (Deleted)			
11		C11	I am a good listener.	0.661			
12		C12	I generally know what type of behaviour is appropriate in any given situation	0.757			
13		C13	I make decisions based on reliable evidence	0.725			
14		C14	My communication skill is my strength.	0.582 (Deleted)			
13		C15	I make decisions based on reliable evidence	0.465 (Deleted)			
Extraction method: Principal component analysis.							
Rotation method: Varimax with Kaiser normalization							

Source: data processed by the author (2022)

Table 3: Internal reliability of the employee competency construct

Component	No. of items	Cronbach's alpha
Interpersonal (IP)	3	0.719
Personal Effectiveness (PE)	3	0.844
Teamwork (TW)	3	0.811
Self-Development (SD)	3	0.836
All items	12	0.856

Source: data processed by the author (2022)

The eigenvalues obtained ranged between 5.506 to 1.105 (> 1.0 ; Table 4), and the variance explained for each factor is as follows: factor 1 (17.600%), factor 2 (17.001%), factor 3 (16.33%), and factor 4 (15.98%). The total variance explained for measuring this construct is 66.919%. The total variance explained might be deemed acceptable because it was higher than the required minimum of 60% (Awang, 2012; Rahlin et al., 2019). In addition, the cumulative variance explained exceeds 60%, and each component's eigenvalue is more than 1.0, signifying that the overall variance explained is acceptable (Bahkia et al., 2020; Baistaman et al., 2020; Shkeer & Awang, 2019). Items with factor loadings greater than 0.6 were included in the analysis because they effectively assess the specific construct. Otherwise, they must be removed from the actual study instruments (Awang, 2012; Alias et al., 2020; Mahmudul Hoque et al., 2018). The number of items per factor must be at least 3 for the factor to be retained (Hair et al., 2010). Since all 12 out of 15 items have a factor loading over 0.6, as shown by the rotated component matrix, all 12 items were accounted for further analysis using the 4 components of the construct, and 3 items were deleted.

Table 4: The corresponding items could be discovered under each of the four visible components

Component	Total variance explained											
	Initial eigenvalues				Extraction sums of squared loadings				Rotation sums of squared loadings			
	Total	%	of	Cumulative	Total	%	of	Cumulative	Total	%	of	Cumulative
	Variance		%		Variance		%		Variance		%	
1	5.506	36.704		36.704	5.506	36.704		36.704	2.640	17.600		17.600
2	1.839	12.262		48.966	1.839	12.262		48.966	2.550	17.001		34.601
3	1.588	10.583		59.549	1.588	10.583		59.549	2.451	16.337		50.938
4	1.105	7.369		66.919	1.105	7.369		66.919	2.397	15.980		66.919

Extraction method: Principal component analysis.

Source: data processed by the author (2022)

Phase 2: Confirmatory Factor Analysis (CFA)

The measurement model developed from the EFA exploration was cross-validated using CFA on sample B (N = 328). The EFA yielded the underlying factor that best represents the data and associated measured values. CFA was used to confirm the measurement model of

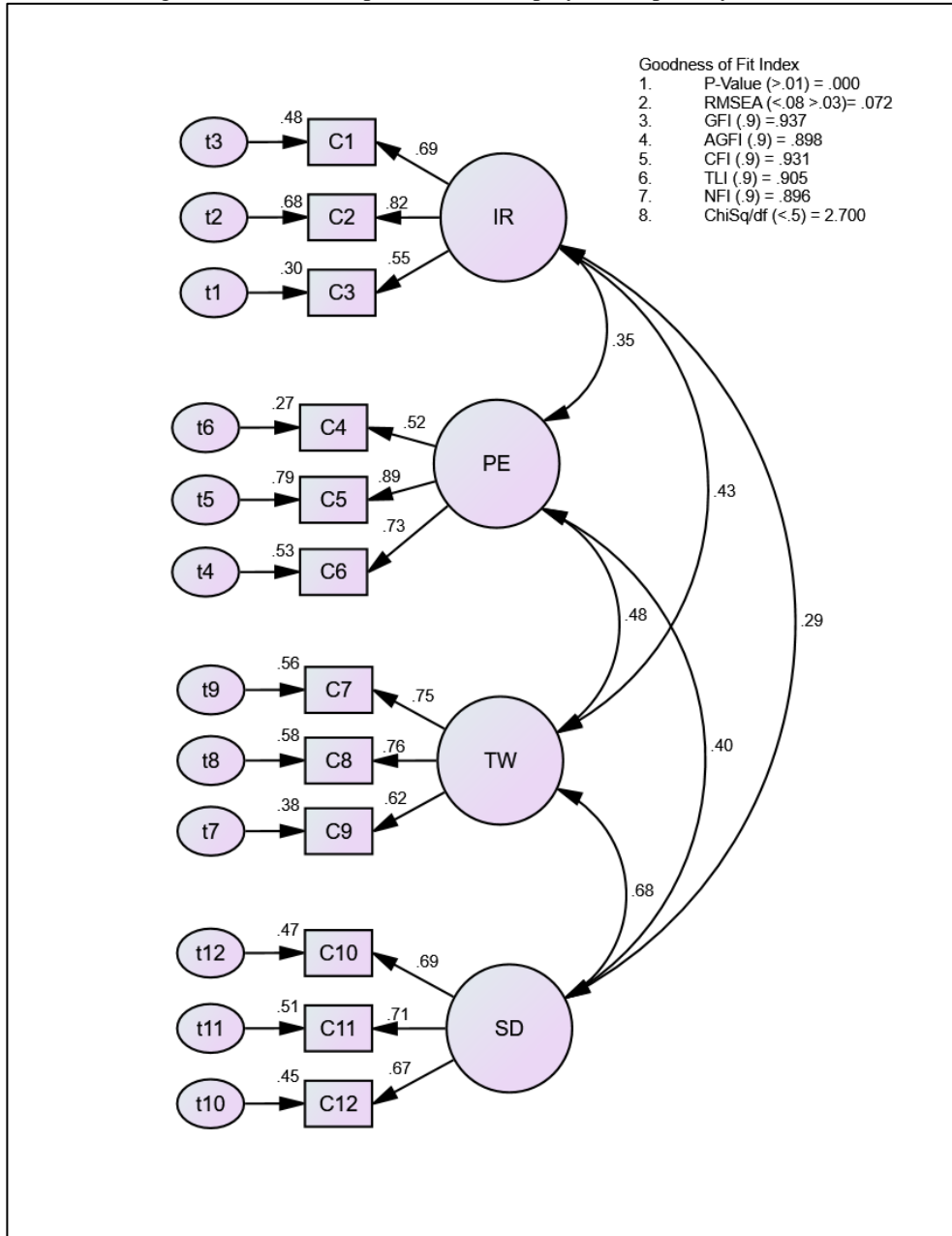
every construct for unidimensionality, validity, and reliability (Hair et al., 2019). The CFA was performed to test the fit of the variables used to measure the studies. To create a model with a better fit, two items were eliminated from the CFA model, leaving 10 items with 4 components.

Construct Validity - The Goodness of Fit Indexes

The maximum likelihood CFA was used to assess the underlying latent variable structure in the employee competency model instrument. The standardized loading estimates for each factor must be between 0.5 and, ideally, 0.7 or higher (Hair et al., 2014; 2019). A higher loading means that items are strongly associated with their constructs. Lower estimated values indicate that the items should be deleted. The acceptability of unidimensionality depends on the construct being consistent with the factor loading indicated (Awang, 2015). The fitness indices for the employee competency measurement model are shown in Table 5. Various statistical indices are used to evaluate the goodness of fit of the model (Hair et al., 2010), divided into absolute fit, incremental fit, and parsimonious fit. Absolute fit is evaluated using indices such as Root Mean Square Error of Approximation (RMSEA), with a cutoff value of less than 0.08. Comparative Fit Index (CFI) is measured by incremental fitting, and its value should be more than 0.90, as well as Tucker-Lewis Index (TLI). The cutoff value for determining a parsimonious fit using the normalized chi-square should be less than 5.0 (Angel et al., 2019).

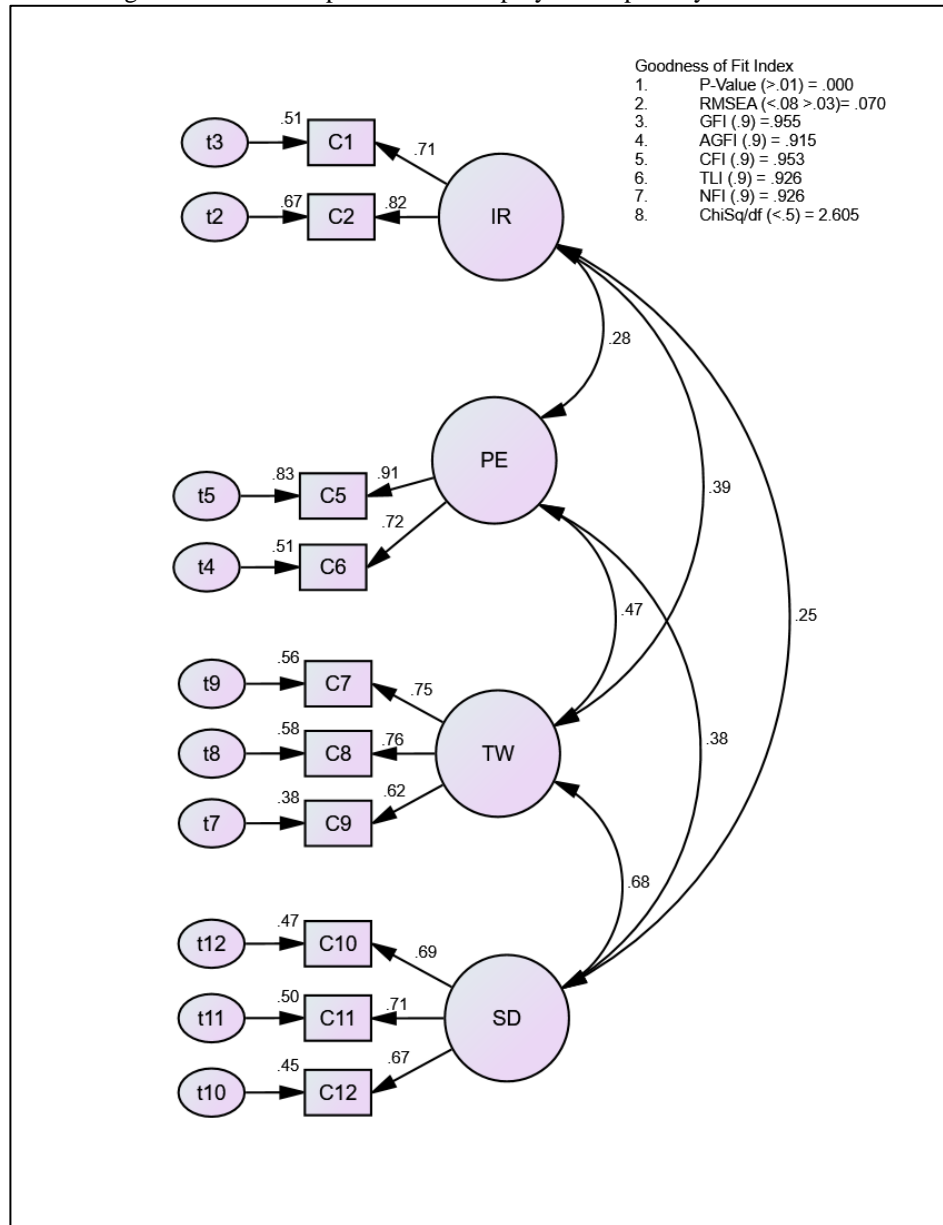
Figure 2 depicts that the fit index of the CFA model is not met by the data evaluated for the model. The chi-square value, CMIN/DF, is 2.970 (meets the criterion of 5.0), RMSEA is 0.078 (meets the criterion of 0.08), GFI is 0.929 (meets the threshold of 0.90), CFI is 0.922 (meets the threshold of 0.90), and TLI is 0.893 (not meets the threshold of 0.90). In this regard, it was decided that two of the items, C3 and C4, be deleted due to low factor loading. The remaining 10 items on employee competence were divided into 4 categories, as suggested by the research, to avoid further measurement error. The employee competency instrument achieved a good fit after deletion of the item, as shown in Figure 3, with Chisq/df of 3.053 (reaching the threshold of 5.0), RMSEA of 0.079 (reaching the threshold of < 0.80), GFI of 0.946 (reaches the threshold of ≥ 0.90), CFI of 0.941 (reaches the threshold of ≥ 0.90), TLI of 0.908 (reaches the threshold of ≥ 0.90), and NFI of 0.916 (reaches the threshold of ≥ 0.90). The results of the fitness indices in Figure 3 are summarized in Table 5.

Figure 2: Initial CFA procedure of employee competency construct



Source: model prepared by the author (2022)

Figure 3: Final CFA procedure of employee competency- after deletion



Source: model prepared by the author (2022)

Table 5: Comparison in the model fit and its acceptance level of initial and final measurement models of the employee competency construct

Category Name	Index Name	*Acceptance Level	Initial generated value	Final generated value	Construct validity
(1) Absolute fit	RMSEA	RMSEA < 0.08 acceptable, < 0.05 good	0.072	0.070	Achieved
	GFI	GFI > 0.9	0.937	0.955	Achieved
(2) Incremental fit	CFI	CFI > 0.9	0.931	0.953	Achieved
	TLI	TLI > 0.9	0.905	0.926	Achieved
(3) Parsimonious fit	chi-sq/df	chi-square/df < 5.0	2.700	2.605	Achieved

*Hair et al. (2014)

Source: data processed by the author 2022

Convergent Validity and Discriminant Validity

The observation of reduced correlations between variables was then used to assess the convergent and discriminant validity of the overall measurement model. The discriminant validity was evidenced by Average Variance Extracted (AVE) factors, which both validities are satisfied as the average variance extracted per construct was above 0.50, and the value of construct correlation was lower than the square root of average variance extracted (Fornell & Larcker, 1981; Henseler et al., 2014). The diagonal value has to be higher than any other value in its row or column to achieve discriminant validity (Awang et al., 2018). The diagonal values in bold are the square roots of the AVE of the respective constructs, while other values are the correlation coefficients between the pair of the respective constructs. The results showed that all 4 components of employee competency are significantly correlated (r-values ranging from 0.29 to 0.79), establishing convergent validity, but none was too highly correlated ($r \leq 0.85$), which indicates that the scale had good discriminative validity (Kline, 2011). The study assessed the discriminant validity of the constructs in Table 6.

Table 6: The Discriminant Validity for employee competency construct

Component	Interpersonal (IP)	Personal Effectiveness (PE)	Teamwork (TW)	Self-Development (SD)
Interpersonal (IP)	0.77			
Personal Effectiveness (PE)	0.28	0.82		
Teamwork (TW)	0.39	0.47	0.71	
Self-Development (SD)	0.25	0.38	0.68	0.68

Source: data processed by the author 2022

The AVEs of all three components of the model (interpersonal relations, personal effectiveness, and teamwork) were greater than 0.5, hence supporting their convergent validity (Hair et al., 2010). According to Fornell and Larcker (1981), an AVE of 0.4 is acceptable when the construct's composite reliability (CR) is greater than 0.7. In this case, the AVE for Self-development (0.476) was, therefore, acceptable as the CR values for the components of self-development were greater than 0.7, supporting the claims of convergent validity and reliability. This indicates that the construct has sufficient convergent validity.

Convergent validity was also assessed using composite reliability (CR) and AVE. The CR must be at least 0.60, and the minimum threshold for an AVE must be at least 0.5 to demonstrate adequate reliability (Hair et al., 2014; Awang, 2015). CR and AVE were also used to determine the reliability of the measurement model. Table 7 shows that all components have

a CR value greater than 0.60. All constructs involved in this study exceeded the threshold criterion.

Table 7: Standardised factor loadings, CR, and AVE for employee competency construct

Component	Items	Factor loading	Average Variance Extracted (AVE)	Composite Reliability (CR)
Interpersonal (IP)	C1	0.71	0.588	0.740
	C2	0.82		
Personal Effectiveness (PE)	C5	0.91	0.673	0.803
	C6	0.72		
Teamwork (TW)	C7	0.75	0.508	0.755
	C8	0.76		
	C9	0.62		
Self-Development (SD)	C10	0.69	0.476	0.732
	C11	0.71		
	C12	0.67		

Source: data processed by the author 2022

The purpose of the present study was to assess the factorial structure of employee competency of administrators in Malaysian public institutions using EFA and CFA methods. According to the EFA results, 3 items with factor loading below 0.6 were removed, leaving 12 items out of 15 items in the final questionnaire including IR, PE, TW, and SD, as presented in Table 2. The findings also demonstrate that the construct could be measured effectively from 12 items, with a TVE of more than 60%. The KMO value of 0.800 (> 0.60) significantly complied with Bartlett's test requirements. All of them demonstrate that the data used in this investigation were adequate. As a result, this study has established a four-component structure of the employee competency instrument. In addition, the component structure of the entire construct instrument, as determined by the EFA results, explained 66.919% of the variance in how relationships between items were configured. High reliability was demonstrated by four components, with Cronbach's alpha values ranging from 0.719 to 0.856.

The results of the CFA analysis showed a high degree of validity and reliability of the scale used to assess employee competency. This indicates that a measurement model with 10 items and a four-factor structure has better employee competency and good model fit in the CFA of the employee competency measurement model. Analysis of the fit statistics revealed that all models have satisfactory levels of overall fit, as shown in the following table: RMSEA = 0.070, GFI = 0.955, CFI = 0.953, TLI = 0.926, and normalized chi-square = 2.605 (Table 5). Therefore, the study successfully created and established the measurement tools for the employee competency construct that can be used in practical applications. The findings indicate

that the items were appropriate, as evidenced by the outcomes. As a result, it is advised that this strategy be applied in future studies.

CONCLUSION

The empirical data from this study can be used to create and validate an instrument to assess employee competence. The scale validated in this study could be used by human resource managers at public universities as a tool to better understand the belief systems of their employees. This could help them make an informed decision that will enable them to provide competent administrators for succession planning. In addition, the results of this study will provide guidance to administrators and policymakers at public universities on the elements that support executive succession planning. By facilitating the creation of appropriate policies, it will also assist in the implementation of best practises in this area. This study will help professionals use new models to facilitate their work.

However, this study had some limitations. First, the accessible population was limited to the public university, and potential sources of information from other private universities were not included. Second, the study sample is relatively small, with only 328 respondents in the field study. Future studies could use a larger sample to better examine staff competency. Finally, the scope of this study was limited to employee competency as a factor in effective leadership succession planning programmes, and it may be that other factors are also important. Future research could be improved by focusing on interviewing chancellors or chief operating officers (COOs) at public universities in Malaysia to obtain an in-depth analysis of succession planning implementation.

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