

Professional Leadership Competencies for Malaysian Educational Middle Leaders

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ABSTRACT

The quality of education is heavily influenced by the professionalism of teachers and the effectiveness of educational leadership. Previous studies have examined educational leadership, and most concentrate on the roles of principals and head teachers. There is a need to delve into a more comprehensive examination of leadership by middle leaders who served as the backbone of the educational system to improve the education quality in the country. Thus, this study aims to establish a consensus among experts regarding the construct of professional leadership competencies for middle leaders in matriculation colleges, employing the Fuzzy Delphi Method (FDM). An instrument comprising elements related to professional leadership competencies was administered to a panel of 30 experts from diverse

fields. The study's outcomes reveal the agreement among expert panels concerning the proposed constructs and elements of professional leadership competencies. All 13 elements met the condition of $d \leq 0.2$, achieving expert agreement exceeding 75% with values ranging from 93% to 100%. The alpha-cut values also exceeded 0.5 (α -cut ≥ 0.5), ranging from 0.886 to 0.940. Through the defuzzification process facilitated by FDM, all elements were ranked according to the hierarchy established by the experts. This

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study introduced a novel construct related to professional leadership competencies, specifically to educational middle leaders.

Keywords: Fuzzy Delphi Method, middle leaders, professional leadership competencies

INTRODUCTION

Excellence in the education system is highly dependent on two elements: a strong teaching profession and educational leadership (Hargreaves & Shirley, 2018; Musa & Halim, 2015). Student achievement and educational success are also influenced by the quality of educational leadership (Hargreaves & Shirley, 2018; Leithwood, 2019). The Malaysian government also gives the quality of educational leadership special attention through the Malaysian Education Blueprint (MEB) 2013-2025 (Ministry of Education [MOE], 2013). The fifth shift in the MEB outlines the need for educational institutions to have quality leaders and support leaders to ensure that the excellence of educational institutions can be achieved (MOE, 2013). In line with that, the scope of educational leadership needs to be seen in a more holistic context. Studies related to the leadership of principals/head teachers are often discussed (Grootenboer, 2018; Harris et al., 2018), including those related to their level of competence in leadership. For example, the KOMPAS Model or school leadership competencies has been provided as a guide for measuring the competencies of principals and head teachers (MOE, 2009). Studies to deepen understanding of leadership are very much needed (Rami et al., 2021).

The excellence in leadership and administrative capability of educational leaders with good and efficient leadership styles is necessary (Bhattacharyya, 2019). However, educational leadership is not only focused on the organization's key leaders, i.e., directors or principals/head teachers alone, but also refers to the role and involvement of middle leaders (De Nobile, 2017; Ekaterini, 2011; Beram et al., 2022). These middle leaders include senior assistant teachers, the head of panatia, the head of the department, the head of the unit, or even the subject coordinator. Middle leaders play a major role in achieving the organization's goals, especially ensuring education's smoothness, effectiveness, empowerment, and viability. The position of middle leaders within the organization, being at the center of the leadership layer, allows them to be the liaison between top leaders and educators more effectively (Ding et al., 2019; Grootenboer, 2018; Thorpe & Garside, 2017).

Middle leaders need to lead their groups at the departmental or unit level, and at the same time, they also lead the curriculum (Bassett & Show, 2017). These two roles cause middle leaders to need high professionalism (Bassett & Shaw, 2017; De Nobile, 2017; Gurr, 2018; Wei, 2018). Middle leaders are officers appointed to specific positions reserved within an organization (De Nobile, 2017; Gurr, 2018). It causes middle leaders to have additional skills (Irvine & Brundrett, 2016) outside the pedagogical context. They need leadership and management competencies (De Nobile,

2017; Gurr, 2018; Irvine & Brundrett, 2017; Roselena & Mohd Izham, 2015). The development of leadership competencies is crucial in coping with changes and the environment of educational organizations (Effendy, 2015; Beram et al., 2020), as well as adaptation to different cultures and task functions (Boyatzis & Ratti, 2009). Thus, excellent middle leaders require strong professional leadership competencies (Intang & Shariff, 2019; Stogdill, 1974).

Competency-oriented human resource management is critical, especially in education (Ismail et al., 2018; Beram et al., 2021). Thus, educational organizations need to empower and improve aspects of human resources, especially involving middle leaders. However, studies related to middle leaders' functions, roles, needs, and competencies are still much lower than studies involving principals/head teachers (Grootenboer, 2018; Harris, 2018). Studies related to middle leaders found only 49 articles published in ISI and Scopus between 2007–2017, covering Europe, Asia, the Middle East, North America, and other countries (Harris et al., 2019). These findings clarify that there is still a need to examine and understand the importance of these middle leaders, particularly in education.

To achieve the goal of creating quality education as well as boosting educational excellence, competency practices among middle leadership also need to be given attention (Deli, 2018; McKenzie & Varney, 2018; Razak, 2017). Nevertheless, middle leaders experience various difficulties in performing their leadership duties

effectively. They become a sandwich between executing top management instructions and maintaining relationships with colleagues (Branson et al., 2016; McKenzie & Varney, 2018;). Developing specific competencies for middle leaders is crucial (Grootenboer, 2018; Gurr, 2018; Razak, 2017; Roselena & Mohd Izham, 2015; Wei, 2018). In this regard, this study was conducted to develop a competency model of middle leaders in educational institutions in Malaysia.

LITERATURE REVIEW

Competence is the rational behavior of individuals to achieve organizational goals that transcend educational and intellectual levels (Prasertcharoensuk et al., 2015). Competence also refers to an individual's experience, wisdom, and ability to perform a task (Boyatzis, 2011) by using a combination of possessed knowledge, skills, behaviors, and attitudes effectively (Slocum et al., 2008). More interestingly, however, competencies can differentiate the competence of one individual from that of other individuals, including this middle leader (Boyatzis, 1982; Spencer & Spencer, 1993; Beram et al., 2021). Leaders who master the set competencies can exhibit and produce more excellent performance compared to those who lack mastery of the competency aspects (Siraj & Ibrahim, 2012).

Existing Competency Model

In Malaysia's education context, the Aminuddin Baki Institute has developed several competency models as a reference

for educational leaders. The Malaysian School Principalship Competency Standard (SKKSM) (2006) was developed as a guide for principals and headmasters of schools in Malaysia. SKKSM covers nine aspects of management that all principals and headmasters must master. Meanwhile, the School Leadership Competency Model (KOMPAS) (2009) contains six main domains that also target the leadership competencies of principals and head teachers. A summary of the components of these two models is in Table 1.

The SKKSM model was developed to strengthen the professionalism of principals and headmasters through a specific guide that can be referred to in performing their duties. Meanwhile, the KOMPAS Model is provided to develop a high-impact level of competence among principals and headmasters (Deli, 2018). However, this competency model focuses on the daily management aspects of principals and headmasters that are functional and exclusive to use in schools managed by MOE. Therefore, a specific competency model was developed for the reference

and use of principals and head teachers in Malaysia's education system. However, the model developed is very specific to the competencies and roles of principals and head teachers as key leaders of school organizations. This model does not include other leadership groups within the school environment, such as senior assistants, field heads, and unit heads. Whereas leadership in an organization, including schools, is not focused on key leaders only (De Nobile, 2017; Ekaterini, 2011; Slocum et al., 2008).

Literature of Middle Leadership

Meanwhile, there is still a lack of research done on middle education leaders (Grootenboer, 2018; Gurr, 2018; Beram et al., 2022), including in the development of middle leader competency models (De Nobile, 2017; Razak, 2017). Competency development among middle leaders can ensure that outstanding and potential leaders in the future (Razak, 2015). At the same time, these middle leader competencies need to be developed because the success and excellence of an educational institution require the overall

Table 1
SKKSM and KOMPAS model components

| No. | SKKSM Components (2006) | KOMPAS Domain (2009) |
|-----|--|--------------------------------|
| 1. | Organizational Management and Leadership | Policy And Direction |
| 2. | Curriculum Management | Instructional and Achievement |
| 3. | Co-curricular Management | Managing Change and Innovation |
| 4. | Management of Student Affairs | Interpersonal Relationships |
| 5. | Financial Management | Sources and Operations |
| 6. | Office Administration Management | Self-Efficacy |
| 7. | Environmental Management and Physical Facilities | |
| 8. | Human Resource Management and Development | |
| 9. | External Relations Management | |

commitment of the existing leadership group (Deli, 2018; McKenzie & Varney, 2018). The middle leaders play a role in mobilizing operations to achieve the vision and mission of the organization through their role as a liaison between top leaders and officers under their control (Branson et al., 2016; Grootenboer, 2018). The middle leader performs the function bilaterally, i.e., up and down simultaneously. This situation makes the role of middle education leaders increasingly complex as they have to manage curriculum, perform administrative work, and implement current policies as directed, but at the same time, they also teach and need to ensure student outcomes (Harris et al., 2018).

Tracing the competencies of middle leaders, Thornton et al. (2018) explained that the competencies of middle leaders in universities are not the same as those of school leaders due to different leadership contexts and needs. Middle leaders in universities are particularly important in supporting faculty and universities, but the dual roles of administrators and lecturers cause their roles to be limited (Branson et al., 2016). Some middle leaders are still incompetent in performing tasks based on their university management assessment (Junaidah & Saodah, 2013). Therefore, a specific model for using middle leaders in higher education should also be created to guide these middle leaders (Beram et al., 2022). The issue of middle leader competence in education does not only occur at the school level but also involves universities.

Lan and Hung (2018) suggested that middle leaders need to master competencies in the context of self-development competencies, professional competencies, human resource competencies, and competencies in the context of regional (cultural). The study by Razak (2017) found 13 critical competencies required by senior assistant teachers of school administration in Malaysia. These competencies include self-awareness, social awareness, communication, problem-solving, teamwork, and instructional development. Razak (2017) also found that differentiating competencies cover professional aspects such as supervision, curriculum-focused, performance management, and ICT management, which these middle leaders found to be less mastered.

Furthermore, Muhamad Yusoff et al. (2014) study found that self-management competencies, relationship management, self-awareness, and emotional competencies become the catalyst for the development process and selection of school leaders. The components of competence expressed as critical by scholars depend on the context and organizational environment involved in their study. Spencer and Spencer (1993) pioneered the Iceberg Competency Model. They explain that competence depends on how an individual thinks, acts, and copes with various situations through motives, traits, self-concepts, knowledge, and skills. While the researchers before them, Boyatzis (1982), through the Model of an Effective Job Performance, has emphasized competencies into three main

clusters: individual, job, and organizational. Job competence (Boyatzis, 1982) is closely related to professional competence, which covers a leader's duties, functions, and roles.

Professional Competencies

Professional leadership competency refers to the ability of mid-level leaders to perform functional tasks involving authentic routines listed in the job description. As educational leaders, the Teacher Professionalism Division (2023) emphasizes that teachers need to demonstrate professionalism as defined by the MOE. In addition to functional aspects of teaching and learning, mid-level educational leaders must also be knowledgeable in office management and human resources (Schum et al., 2018), which are new skills beyond pedagogy (Irvine & Brundrett, 2017). Therefore, this competence needs to be developed, especially among novice mid-level leaders.

Based on the Iceberg Competency Model and the Model of Effective Job Performance, which are often referred to by many researchers of competency aspects (Razak, 2017; Tengku, 2016), it can be summarized that the professional competence component (functionality) becomes a competency that is stated as very important (Ibrahim et al., 2019). As a middle leader, the areas of responsibility that need to be implemented are not focused on management and administration but also include teaching, learning, and curriculum management (Basett & Show, 2017; De Nobile, 2017; Gurr, 2018;). This professional leadership competency is also clearly stated

in the Malaysian Teacher Standards 2.0 (Teacher Professionalism Division, 2023), which emphasizes that as teachers, these middle leaders still need to practice the aspects of professionalism standardized by the MOE.

MOE also pays special attention to professional leadership in the Integrated Assessment of Education Service Officers (MOE, 2013), covering the group of middle education leaders. Emphasis on aspects of professional competence among middle leaders needs to be given more comprehensive attention (Intang & Shariff, 2019), especially in developing the competency model of middle leaders, which is the goal of this study. Therefore, this study was conducted to answer whether there is expert agreement on the elements of professional leadership competencies that need to be included in the Middle Leader Competency Model construct.

METHODS

This study aims to realize the development of the MOE Matriculation College Middle Leader Competency Model. For that purpose, this study was conducted using Design and Development Research (DDR) by applying three phases: the needs analysis phase, the design and development phase, and the usability assessment phase (Richey & Klien, 2007; 2014). DDR allows research to be conducted using multiple methods (Siraj et al., 2020), with each phase utilizing different methodologies. The study in this development phase involves data collection using the Fuzzy Delphi Method (FDM)

technique to obtain expert agreement on the elements in the construct of the developed model. FDM can be used to identify, validate, evaluate, and justify the key elements of the construct in the model development process (Ridhuan et al., 2017; Yoong et al., 2022).

This study also applied the FDM technique introduced by Murray et al. (1985) and reviewed by Kaufmann and Gupta (1988). FDM combines fuzzy set numbering or fuzzy set theory applied in traditional Delphi techniques. The FDM technique is an improved and rebranded measurement method based on the conventional Delphi method (Ridhuan et al., 2018; Siraj et al., 2020). Thus, this method is not new but has been widely used in various research fields that require experts' agreement in the aspects studied (Chang et al., 2011; Yoong et al., 2022).

Zadeh (1965) introduced the concept of 'linguistic variables,' which is to convert words into quantitative values that are easily measurable, especially in solving critical problems (Ding et al., 2019; Ridhuan et al., 2018). The fuzzy set theory allows linguistic variables to be interpreted gradually for each element in a set, and the values contained in this Fuzzy set range from 0 to 1 or in intervals (0.1) (Ding et al., 2019; Zadeh, 1965). The strength of FDM in interpreting linguistic variables to quantitative values allows it to be a more effective measurement tool and solve problems that have uncertainty in a study (Ridhuan et al., 2018). Many researchers have also used FDM, especially in decision-

making, including human resource-related fields (Ding et al., 2019). There are two main things in FDM: the Triangular Fuzzy Number and the Defuzzification Process. Triangular Fuzzy Number has 3 values (m_1 , m_2 , m_3): minimum, most reasonable, and maximum. While defuzzification allows ranks (rankings) to be given to elements based on expert agreement. Expert consensus is achieved when the Triangular Fuzzy Numbers meet the threshold criteria ($d \leq 0.2$, and the expert agreement percentage is $\geq 75\%$). Meanwhile, the defuzzification criterion is met when the alpha-cut value (α -cut) is ≥ 0.5 (Siraj et al., 2020).

Research Samples

This study was conducted using the FDM technique by involving a total of 30 experts in the field of leadership and competence (Jones & Twiss, 1978; Siraj et al., 2013) who were purposefully selected based on their experience (Cohen et al., 2018) in middle leadership. Rossett (1987) also explained that selecting a sample based on experience and knowledge can provide effective and useful information for the needs of the study. Sampling in Delphi-based techniques cannot be statistically obtained because it requires the involvement of experts who need to be identified first (Adler & Ziglio, 1996). Further, questionnaires containing competency elements were distributed to experts appointed from among university lecturers, senior MOE officials, teacher education institute lecturers, vocational college directors, matriculation college middle leaders, district education officers,

principals, and middle leaders from six colleges. The expert panel was asked to state their level of agreement on the main construct based on the seven-point Likert scale, which has been translated to the Fuzzy scale. Next, the data obtained needs to be analyzed using the Fuzzy Delphi linguistic scale.

Research Instruments

Using FDM techniques, instruments were formed based on literature highlights, pilot studies, or experience (Skulmoski et al., 2007) or using literature highlights, expert interviews, or nominal group techniques (Ridhuan et al., 2014; Siraj et al., 2020). Based on this view, a questionnaire instrument was prepared through the agreement of FDM 1 experts, which has been implemented in advance. The instrument of this study uses a seven-point scale to describe the value of the Fuzzy linguistic scale. This scale is then translated to the value of the Fuzzy set scale. Fuzzy sets interpret each element in them in unit intervals ranging from 0 to 1 (Ding et al., 2009). Triangular Fuzzy Numbers refer to m1, m2, and m3 Values in this FDM technique. The value of m1 represents

the minimum value, m2 represents the reasonable value, and m3 represents the maximum value (Table 2).

Based on Table 2, when an expert chooses a value such as a scale of 7, this value has been translated into a Fuzzy scale based on the values of m1 (0.9 = 90% likely agree), m2 (1.0 = 100% likely agree) and m3 (1.0 = 100% likely agree). In other words, the higher the selected Fuzzy scale, the higher the level of agreement and accuracy of the data obtained (Hassan et al., 2018).

Based on the explanations related to the Fuzzy Delphi processes mentioned, the questionnaire presented was to assess expert agreement on the main constructs of the Matriculation College Middle Leader Competency Model. The elements for the professional leadership competency construct of this study are shown in Table 3.

The list of professional competency elements was obtained from a literature review using existing competency models and combined with findings from interviews with six educational leadership experts in the first phase of the study. Therefore, a questionnaire containing these 13 elements was distributed to 30 experts,

Table 2
Scale of fuzzy linguistic variables

| Instrument Scale | Linguistic Variables | Triangular Fuzzy Numbers (m1, m2, m3) |
|------------------|------------------------|---------------------------------------|
| 7 | Very strongly agree | (0.9, 1.0, 1.0) |
| 6 | Strongly agree | (0.7, 0.9, 1.0) |
| 5 | Agree | (0.5, 0.7, 0.9) |
| 4 | Moderately agree | (0.3, 0.5, 0.7) |
| 3 | Disagree | (0.1, 0.3, 0.5) |
| 2 | Strongly disagree | (0.0, 0.1, 0.3) |
| 1 | Very strongly disagree | (0.0, 0.0, 0.1) |

Note. Sources by Siraj et al. (2020, p. 186)

Table 3
Elements of professional leadership competencies

| No. | Elements of the professional leadership competencies construct tested | Source of elements | New elements |
|-----|---|----------------------------|--------------|
| 1 | Understanding colleague | Boyatzis (1982) | |
| 2 | Decision making | Slocum et al. (2008) | |
| 3 | 21 st Century Teaching and Learning (TnL) | Hoy and Miskel (2008) | |
| 4 | Work quality | Boyatzis (1982) | |
| 5 | Monitoring | Slocum et al. (2008) | |
| 6 | Data-driven decision making | Expert interviews | / |
| 7 | Take responsibility for decisions | Slocum et al. (2008) | |
| 8 | Report writing | Expert interviews | / |
| 9 | New knowledge skills | Expert interviews | / |
| 10 | Ability to lead | Expert interviews | / |
| 11 | Creativity | Spencer and Spencer (1993) | |
| 12 | Mentoring | Slocum et al. (2008) | |
| 13 | ICT skills | Hoy and Miskel (2008) | |

and the findings were analyzed using the formulas of Triangular Fuzzy Numbers and Defuzzification.

RESULTS

The study of developing this Middle Leader Competency Model was conducted using the Fuzzy Delphi technique, involving 30 experts. The demographic distribution of the panel of experts involved is shown in Table 4.

Table 4 shows the demographic information of the panel of experts involved in developing this Middle Leader Competency Model. A total of 30 purposefully selected panels of experts provided feedback through the FDM questionnaire submitted. A total of 12 (40%) experts have more than 20 years of experience in education management, followed by a total of 10 (33%) experts who have between 16 to 20 years of experience, and 8 (27%) have between 11 to 15 years of experience in education management. Of

the total, it was found that 40% (12) experts hold positions in the top management group of educational organizations, while the remaining 60% (18) experts hold positions as middle leaders. From the aspect of the working location, it was found that 10 (33%) experts served in MOE, 8 (27%) experts from matriculation colleges, followed by 5 (17%) experts each from public universities and state education department/education department district/institute of teacher education. While 2 (6%) experts represent vocational colleges/form 6 colleges. Furthermore, the information on the highest academic qualifications of the panel of experts involved showed that 11 (37%) experts have a Master's Degree, followed by 10 (33%) who have a Bachelor's Degree, and a total of 9 (30%) experts hold a Doctor of Philosophy Degree. The selection of expert panels from various educational institutions can avoid bias and

Table 4
Demographic distribution of FDM expert panel

| Item | Category | Number | Percentage |
|------------------------------------|-----------------------------|--------|------------|
| Experience in education management | 5–10 years | 0 | - |
| | 11–15 years | 8 | 27 |
| | 16–20 years | 10 | 33 |
| | More than 20 years | 12 | 40 |
| Current position | Top management | 12 | 40 |
| | Middle management | 18 | 60 |
| Latest place of work | Malaysia's education camp | 10 | 33 |
| | Public university | 5 | 17 |
| | Matriculation college | 8 | 27 |
| | JPN, PPD, IPG | 5 | 17 |
| | Vocational college/Form 6 | 2 | 6 |
| The highest academic qualification | Doctor of philosophy Degree | 9 | 30 |
| | Master's degree | 11 | 37 |
| | Bachelor's degree | 10 | 33 |

generate a more comprehensive view for developing this competency model.

Next, an analysis of the study findings was performed by testing the agreement of the expert panels on the proposed constructs and elements in professional leadership competencies. The tested elements were obtained by mapping one theory and four competency models, followed by the proposal of new elements by six informants in the needs analysis phase. A total of 13 items were presented as elements of professional leadership competencies in the development process of this Middle Leader Competency Model. To obtain expert panel agreement, the first condition to be met using FDM is that the threshold value must be less than or equal to 0.2 ($d \leq 0.2$). The analysis of threshold value data obtained through the Fuzzy Delphi instrument involving 30 experts is shown in Table 5.

Table 5 shows that the average threshold value ' d ' for each element tested

is qualified ($d \leq 0.2$). All 13 elements of the professional competence of middle leaders tested obtained a threshold value (d) based on expert agreement less than the set threshold value ranging from 0.060 (item 10) to 0.116 (item 11). Therefore, all 13 of these elements were accepted as constructs of the professional competence of mid-matriculation college leaders. Overall, the threshold value ' d ' for the professional leadership competency construct is 0.008. The obtained value also satisfies the threshold condition ($d \leq 0.2$). Directly, these findings indicate that expert agreement has been reached for the constructs and elements tested. Accordingly, the analysis of the study can be continued by looking at the compliance of the expert agreement percentage requirement (Ridhuan et al., 2017). After the threshold value (d) is obtained, further research is needed to test the percentage of expert agreement on the elements tested.

Table 5
 Threshold value 'd' based on expert consensus

| Experts | Items | | | | | | | | | | | | |
|-------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 1 | 0.069 | 0.088 | 0.066 | 0.090 | 0.097 | 0.102 | 0.061 | 0.071 | 0.051 | 0.041 | 0.041 | 0.069 | 0.057 |
| 2 | 0.086 | 0.088 | 0.066 | 0.063 | 0.056 | 0.102 | 0.061 | 0.083 | 0.051 | 0.112 | 0.041 | 0.326 | 0.057 |
| 3 | 0.086 | 0.088 | 0.088 | 0.090 | 0.097 | 0.102 | 0.093 | 0.083 | 0.051 | 0.112 | 0.041 | 0.084 | 0.057 |
| 4 | 0.069 | 0.066 | 0.066 | 0.063 | 0.056 | 0.102 | 0.061 | 0.071 | 0.290 | 0.041 | 0.274 | 0.069 | 0.096 |
| 5 | 0.069 | 0.066 | 0.066 | 0.063 | 0.056 | 0.051 | 0.061 | 0.071 | 0.104 | 0.041 | 0.120 | 0.069 | 0.096 |
| 6 | 0.086 | 0.088 | 0.088 | 0.090 | 0.097 | 0.102 | 0.093 | 0.083 | 0.051 | 0.112 | 0.041 | 0.084 | 0.057 |
| 7 | 0.086 | 0.066 | 0.088 | 0.090 | 0.097 | 0.051 | 0.061 | 0.322 | 0.290 | 0.041 | 0.274 | 0.084 | 0.299 |
| 8 | 0.069 | 0.066 | 0.066 | 0.063 | 0.056 | 0.051 | 0.061 | 0.071 | 0.051 | 0.041 | 0.120 | 0.069 | 0.096 |
| 9 | 0.069 | 0.066 | 0.066 | 0.063 | 0.056 | 0.051 | 0.061 | 0.071 | 0.104 | 0.041 | 0.120 | 0.069 | 0.096 |
| 10 | 0.069 | 0.066 | 0.066 | 0.063 | 0.056 | 0.051 | 0.061 | 0.071 | 0.104 | 0.041 | 0.120 | 0.069 | 0.096 |
| 11 | 0.323 | 0.327 | 0.088 | 0.090 | 0.097 | 0.102 | 0.093 | 0.083 | 0.051 | 0.112 | 0.274 | 0.084 | 0.057 |
| 12 | 0.069 | 0.066 | 0.088 | 0.090 | 0.056 | 0.051 | 0.061 | 0.083 | 0.051 | 0.112 | 0.120 | 0.084 | 0.057 |
| 13 | 0.069 | 0.066 | 0.088 | 0.063 | 0.056 | 0.051 | 0.061 | 0.083 | 0.051 | 0.041 | 0.120 | 0.069 | 0.057 |
| 14 | 0.069 | 0.066 | 0.066 | 0.063 | 0.056 | 0.051 | 0.061 | 0.071 | 0.104 | 0.041 | 0.120 | 0.069 | 0.096 |
| 15 | 0.069 | 0.066 | 0.066 | 0.063 | 0.056 | 0.051 | 0.061 | 0.071 | 0.104 | 0.041 | 0.120 | 0.069 | 0.096 |
| 16 | 0.069 | 0.066 | 0.066 | 0.063 | 0.056 | 0.051 | 0.061 | 0.071 | 0.104 | 0.041 | 0.120 | 0.069 | 0.096 |
| 17 | 0.069 | 0.066 | 0.066 | 0.063 | 0.056 | 0.051 | 0.061 | 0.071 | 0.104 | 0.041 | 0.120 | 0.069 | 0.096 |
| 18 | 0.069 | 0.066 | 0.066 | 0.090 | 0.097 | 0.051 | 0.093 | 0.071 | 0.051 | 0.041 | 0.041 | 0.069 | 0.057 |
| 19 | 0.069 | 0.066 | 0.066 | 0.063 | 0.056 | 0.051 | 0.061 | 0.071 | 0.104 | 0.041 | 0.120 | 0.069 | 0.096 |
| 20 | 0.069 | 0.066 | 0.066 | 0.063 | 0.056 | 0.051 | 0.061 | 0.071 | 0.104 | 0.041 | 0.120 | 0.069 | 0.096 |
| 21 | 0.612 | 0.327 | 0.327 | 0.331 | 0.056 | 0.051 | 0.332 | 0.071 | 0.104 | 0.041 | 0.274 | 0.069 | 0.096 |
| 22 | 0.086 | 0.088 | 0.066 | 0.063 | 0.097 | 0.102 | 0.061 | 0.071 | 0.104 | 0.041 | 0.041 | 0.084 | 0.057 |
| 23 | 0.069 | 0.066 | 0.066 | 0.063 | 0.056 | 0.051 | 0.061 | 0.083 | 0.051 | 0.041 | 0.041 | 0.084 | 0.057 |
| 24 | 0.069 | 0.066 | 0.066 | 0.063 | 0.056 | 0.051 | 0.061 | 0.071 | 0.104 | 0.041 | 0.041 | 0.084 | 0.057 |
| 25 | 0.086 | 0.088 | 0.088 | 0.090 | 0.097 | 0.102 | 0.093 | 0.083 | 0.051 | 0.112 | 0.041 | 0.084 | 0.057 |
| 26 | 0.069 | 0.066 | 0.066 | 0.063 | 0.056 | 0.051 | 0.061 | 0.071 | 0.104 | 0.041 | 0.120 | 0.069 | 0.096 |
| 27 | 0.069 | 0.066 | 0.066 | 0.063 | 0.056 | 0.051 | 0.061 | 0.071 | 0.104 | 0.041 | 0.120 | 0.069 | 0.096 |
| 28 | 0.086 | 0.088 | 0.088 | 0.090 | 0.097 | 0.102 | 0.093 | 0.083 | 0.051 | 0.112 | 0.041 | 0.084 | 0.057 |
| 29 | 0.069 | 0.088 | 0.327 | 0.063 | 0.097 | 0.102 | 0.332 | 0.322 | 0.290 | 0.112 | 0.274 | 0.084 | 0.299 |
| 30 | 0.069 | 0.066 | 0.066 | 0.090 | 0.097 | 0.051 | 0.093 | 0.071 | 0.051 | 0.041 | 0.041 | 0.069 | 0.057 |
| 'd' value | 0.100 | 0.089 | 0.089 | 0.081 | 0.071 | 0.068 | 0.086 | 0.091 | 0.100 | 0.060 | 0.116 | 0.083 | 0.092 |
| Construct average | 0.008 | | | | | | | | | | | | |

Table 6 summarizes the expert consensus analysis on the constructs and elements of professional leadership competencies for middle leaders. FDM analysis showed that after the elements were tested, it was found that the expert agreement values ranged from 93.3% (items 1, 2, 3, 7, and 8) to 100% (items 5, 9, 10, and 11). Items that obtained 100% agreement indicated that all 30 expert panel members agreed these items were highly important for middle leaders. Therefore, all 13 tested elements that met the expert agreement requirement of greater than 75% were accepted.

After the two FDM conditions are met, further testing is performed by defuzzification analysis to determine the ranking of each element. The fuzzy score (A) analysis obtained ranged from 0.886 to 0.940. The values obtained from the defuzzification process show that all elements met the third condition: the value exceeding (α -cut ≥ 0.5). As such, all tested elements are accepted by a group of experts, and further, this process allows ranking settings to be performed. Table 7 shows the ranking of the personal leadership competencies of middle leaders after the ranking process was calculated.

The re-ranked element in Table 7 shows that the leadership ability element obtained the highest fuzzy score (A) value

in the middle leader professional leadership construct with a defuzzification value = 0.919, followed by a data-based decision element with a defuzzification value = 0.933. The next element in the third important position is monitoring, with a defuzzification value = 0.930, while taking responsibility for decisions becomes the fourth important element with a defuzzification value = 0.932. At the same time, the element's work quality was evaluated by an expert panel with defuzzification = 0.926. Next, the decision-making element and 21st-century TnL are on the same rank as the fifth important element with a defuzzification value = 0.922. The determination of the rank of importance of

Table 7
Element rankings based on expert consensus

| No. | Elements of the professional leadership competencies construct tested |
|-----|---|
| 1 | Ability to lead |
| 2 | Data-driven decision making |
| 3 | Monitoring |
| 4 | Take responsibility for decisions |
| 5 | Work quality |
| 6 | Decision making |
| 7 | 21 st Century Teaching and Learning (TnL) |
| 8 | Mentoring |
| 9 | Understanding colleague |
| 10 | Report writing |
| 11 | ICT skills |
| 12 | New knowledge skills |
| 13 | Creativity |

Table 6
Summary of expert consensus analysis on professional leadership competencies

| Item | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|-----------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Agreement (%) | 93.3 | 93.3 | 93.3 | 96.7 | 100 | 100 | 93.3 | 93.3 | 100 | 100 | 100 | 96.7 | 100 |
| Fuzzy score (A) | .919 | .922 | .922 | .924 | .930 | .933 | .926 | .919 | .897 | .940 | .886 | .921 | .902 |
| Ranking | 9 | 6 | 6 | 5 | 3 | 2 | 4 | 9 | 12 | 1 | 13 | 8 | 11 |

this element continues until the element in the 13th position, which is creativity, obtains the value of defuzzification = 0.886. From this defuzzification process, it is found that all elements pass the specified condition that the defuzzification value must be equal to or exceed the value of 0.5 (α -cut ≥ 0.5).

DISCUSSION

This study has developed an FDM questionnaire instrument to validate the constructs and elements of professional leadership competencies of middle leaders based on literature highlights (Skullmowski et al., 2007; Siraj et al., 2020) and interviews (Ridhuan et al., 2014). All the elements contained in this professional competency construct were derived from one theory and four competency models, as well as the findings of expert interviews. Mapping existing theories and models forms the basis for developing competency-based research instruments. Therefore, the findings of this study also confirm the ability of the instrument developed to measure the competence of professional leadership in the context of educational institutions in Malaysia. A threshold value of ' d ' less than 0.2 for constructs and elements confirms expert agreement on the tested items. In other words, experts have a high level of understanding (Adler & Ziglio, 1996) even though they are not face-to-face when answering the instruments of this study.

The findings of this study also confirm four new elements incorporated into the construct of professional leadership

competencies. These new elements were included based on expert interviews in the needs analysis phase. These four new elements were also found to have high agreement values. The relevant elements were leadership ability ($d = 0.060$), data-based results ($d = 0.068$), report writing ($d = 0.091$), and new knowledge skills ($d = 0.10$). A threshold value of less than 0.2 explains a high level of agreement on the consensus of a 30-member panel of educational leadership experts. It clarifies that middle leaders' professional competencies need to be augmented with knowledge and skills appropriate to adding these already validated elements. This statement is aligned with the views of Grootenboer (2018), who explains that mid-level leaders require specific knowledge and skills to succeed in their roles.

In addition, the expert panel also confirmed all 13 elements tested. It is found that middle leaders need professional leadership competencies to face challenges in performing their duties effectively, with threshold values ranging from 0.060 to 0.116. The expert agreement value on the professional leadership competency construct obtained through FDM was 0.008 and smaller than the threshold value ($d \leq 0.2$), indicating that this competency was highly significant with middle leaders. At the same time, each element's expert agreement percentage is between 93.3% and 100%. Meanwhile, the fuzzy test score (A) was between 0.886 and 0.940, indicating the level of acceptance of all elements tested above the α -cut value of 0.5.

The study also successfully rearranged the 13 elements tested based on the rank values obtained from the expert consensus. The test results showed that the 10th element from the initial list was given the highest rank and changed position as the first element in this developed professional leadership competency construct. The creativity element, the 11th element in the initial list, changes position as the last element in this construct. This process is performed on all 13 elements according to the priority list from the first to the 13th ranking. Therefore, the FDM technique used is very suitable for decision-making (Ding et al., 2019) related to the elements of professional leadership competence for the middle leader. FDM simplifies the decision-making process and allows for the ranking of elements. The organization of these ranks has made it easier for middle leaders to improve their knowledge and skills to master professional leadership competencies in stages.

The findings of this study confirm that professional leadership competence is one of the important constructs of middle leaders. This study's findings are slightly different from competency studies conducted by previous researchers (Boyatzis, 1982; Spencer & Spencer, 1992; Slocum et al., 2008) because they focus on leadership competencies in general and emphasize more on the organization. The emphasis on competency aspects, specifically to middle leaders, is rarely given attention. Therefore, the findings of this study have presented a new dimension in the context of educational

leadership in Malaysia. This view aligns with Lan and Hung (2018) that middle leaders need to master competency-based knowledge and skills, including professional competencies.

The study's findings also prove that professional leadership competencies are significant to the middle leaders of educational institutions. This view aligns with Tay et al. (2019), who explained that middle leaders need to underpin high accountability in management in educational institutions. The role of middle leaders as a liaison between top management and officers under their control and professional leadership competencies are very important in gaining the trust of all parties and facilitating the execution of tasks. The ability of middle leaders to practice professional competencies in educational institutions can help them become effective leaders (Cecelia & Sabariah, 2019; Grootenboer, 2018; Roselena & Mohd Izham, 2015). Empowering professional leadership competencies can also increase the effectiveness of human resource management while creating a conducive work environment.

The main implication of the findings of this study is that they can give middle leaders in educational institutions an idea of the importance of mastering all the elements of professional leadership competencies that have been validated. Including the elements presented is the most important asset in distinguishing high or medium-quality middle leaders. Boyatzis (1982) explained that competency practices enable

an individual to be more efficient and productive in employment compared to less competent individuals.

As a contribution to the development of existing theory, this study has presented four new elements of professional competence confirmed by experts: data-based decision-making, report writing, new knowledge skills, and the ability to lead. These elements are compatible with the task requirements of middle leaders today and can help these middle leaders run the organization in the future. Middle leader competencies include four new elements that can catalyze high-performing middle leaders. As an implication for practice, middle leaders can use the 13 confirmed elements as a guide for an excellent service culture in educational institutions. Middle leaders must be able to lead and be led by other staff. Mastering this professional competence is crucial because middle leaders face diverse and complex tasks. Therefore, this professional competency-based practice can equip middle leaders to meet Malaysian Teacher Standards 2.0 set by MOE.

In addition, human resource practitioners can also use these elements of certified professional leadership competencies as the basis of training and development activities for newly appointed middle leaders. The capacity development of middle leaders based on leadership competencies is very much needed, especially in education (Effendy, 2015). Training and development programs such as workshops, courses, coaching mentoring, and self-assessment can be implemented by middle leaders in a

focused manner using the elements of the model developed.

CONCLUSION

In conclusion, this study was conducted in line with the DDR approach, which is to use experts in the development process of the main model of the study. In the development phase of this model, the FDM method was used to obtain expert agreement on the constructs and elements of middle leader leadership competencies. This study has shown that the constructs and elements of professional leadership competencies proposed for middle leaders have gained expert consensus. All elements were accepted after being tested and passing all three FDM prerequisites.

Besides that, this study also highlights FDM as one of the suitable techniques for developing competency models. The target groups can also utilize the validated elements relevant to Malaysia's educational leadership context. The constructs and elements obtained in this development phase were next tested in the usability phase, the final phase of the DDR-based study. Usability testing has been performed on middle leaders as users of this developed competency model and analyzed using Structured Equation Modelling (SEM) to obtain a goodness-of-fit index.

Overall, the construct of professional leadership competencies has gained consensus from educational leadership experts from various institutions and is suitable for the Malaysian context. Therefore, further studies can be conducted

using this construct involving middle-level leaders in other educational institutions, including Teacher Education Institutes, Aminudin Baki Institute, and district education offices. Further research can also be conducted by testing the model's fitness using Structural Equation Modelling (SEM) analysis to examine the applicability of this construct to mid-level leaders in the field.

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