

Development of Education Management Competency Measurement Instruments with an Outcome-Based Education

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ABSTRACT. This research aims to develop instruments used in measuring educational management competencies based on lecture outcomes. The method used is R&D with a quantitative approach. This research was conducted in Yogyakarta, Indonesia. The sample used was 715 students. Content validity was tested using the Aiken V index formula. Construct validity was tested using Confirmatory Factor Analysis (CFA). The results of this study indicate that the content validity coefficient is > 0.8 , indicating that the statement items are valid. The KMO value (0.982) is > 0.05 , indicating an adequate model fit. Scree Plot meets the unidimensional criterion, that is, it can be used to measure 1 dominant factor. Statistics χ^2 467, RMSEA 0.042, SRMR 0.030, CFI 0.990, NFI 0.989, meaning goodness of fit. The recommendation of this research is to use it to measure educational management competencies among educators worldwide, with diverse regional characteristics. So, in the long term, learning quality improves because it has a quality measurement tool. In practice, this instrument enables educators and institutions to evaluate and strengthen management skills, thereby improving the quality of learning and institutional performance. Academically, it advances research in educational measurement by providing a psychometrically sound instrument that supports broader implementation of OBE.

Keywords: *Education Management Competence, Educators, Measurement, Outcome-Based Education*



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INTRODUCTION

The rapid development of science and technology has a significant impact on mindsets (Mahmudah et al., 2021), behavior (Tao et al., 2022), and processes across all fields, especially in education. Educational activities, especially in the learning process, need to be integrated with technology and aligned with developments in the world of work (Nguyen et al., 2022). This is the basis for educators to respond to an increasingly fast-paced era, so they can develop themselves (Garanina et al., 2021) and innovate in the use of technology in learning (Shen, 2008). Learning innovations should ideally be developed in line with technological advances (Syakdiyah et al., 2019). Learning innovation through the use of this technology is a challenge for educators (Nurmahmudah et al., 2025).

Data from the Ministry of Education and Culture indicate that 60% of educators in Indonesia are still not proficient in using information technology for learning (Kasih et al., 2021). This issue is crucial for educators, as it directly affects their competence (Cahyono et al., 2021). Therefore, educators who adapt to technological developments will certainly better understand how to manage technology-based learning (Abdurrahman et al., 2023). Ideally, learning is implemented in response to the needs of the world of work, thereby opening access to competition (Mahmudah & Putra, 2021). Although we cannot say with certainty how the future will affect professional development, it is clear that educators today lack optimal access to technological support (Kuhfeld et al., 2022).

Managing learning is an important part of the education management process. Teachers are expected to manage this so they can fulfill the competencies required by themselves, students, and stakeholders when it is implemented in educational units. The most important thing the education unit does is ensure that all students can learn. Therefore, teachers are required to redesign the lecture system so that students can learn. In this regard, Outcome-Based Education (OBE) is needed to replace traditional lecture practices and to embody the modernist tendencies most deplored in contemporary lectures.

OBE can be an effective part of improving learning methods—one of the best ways to achieve the goals of lectures. Based on the OBE model, the teacher fostered students' corpus consciousness by optimizing the teaching structure, improving teaching methods, and creating a conducive teaching environment (Zhang & Fan, 2019). One lecture method that gives students the freedom to be creative. This aligns with the lectures' achievements and with the lecture corridors described in the study contract. The learning environment is more encouraging when the student's own ideas are given greater importance than those listed by a teacher. Giving an assignment to a limited group of volunteers (Reddy & Reddy, 2014). OBE is used in education because it clearly focuses on and organizes the educational system around what is necessary for all students to be able to do upon completing their learning (Asim et al., 2021).

Educational management competencies need to be developed and improved (Sherstneva, 2021). This research is important for developing measurement tools that teachers and principals can use to improve competence in teacher management, staffing, student affairs, curriculum and learning, special school services, finance, public relations, and facilities. This prompted research to equip prospective teachers in schools with reliable competence. The candidate is a student currently pursuing a Master's in Education Management.

Educational management competence, an important point in this research, is the implementation of student-led lectures. So it becomes a research urgency. This serves as a reference for the development of outcome-based education instruments. The relevance of this study lies in the formulation of the curriculum in accordance with the expected results: not only knowledge but also the skills used in the educational process during college, ready to be implemented upon graduation and in working life, in line with the competencies learned. The purpose of this research is to develop instruments to measure lectures using an outcome-based education approach.

The instrument is a tool used in measurement. The instrument used assesses student competencies in measurement, aligned with lecture outcomes (outcome-based education). Instrument development is the preparation of items used to improve the performance of the competency to be measured (Mardapi, 2008; Retnawati, 2016). Development is the process used to answer the research formulation in accordance with the applicable procedures. Instrument development was tested across different groups, so it was necessary to equalize the overall measurement results to a single scale. The development of measurement instruments aims to produce educational products for measuring competency (Haryati, 2017).

The development of the instrument, as explained above, can be interpreted as a process that uses tools to measure and yields results as materials for improvement. The development of educational management competency instruments based on lecture outcomes (outcome-based

education) is an important basis for students. This is because most college students already work as teachers and school principals. So that the results of the measurements taken serve as a basis for lecturers and researchers to improve the lecture process and achieve lecture outcomes.

Educational management competence is important for educators. In line with this, education management competencies need to be prepared for fresh graduates who will serve as evaluation material for teachers and principals who are currently students. Competence is an important process because it serves as a trigger for carrying out activities, thereby increasing performance. Educational management competencies in the lecture process are developed based on lecture outcomes (outcome-based education). The achievements of the lectures arranged during the lecture process are tailored to the needs of the community, in this case, the school as a training ground for school principals, teachers, and prospective teachers who have graduated with a Master's in Education Management. Outcome-Based Education (OBE) is a performance-based approach for curriculum development, a future-oriented learner-centered 'Empowerment Paradigm' that empowers and endorses all learners with future success. It is an influential and tempting way of restructuring and reorganizing engineering education (Shaheen, 2019).

One of the successes of the OBE competency development program is its built-in curriculum map. The professional foundation courses train students in basic professional abilities and qualities and help them achieve sustainable development (J. Wang, 2013). This is used as a benchmark in evaluating success. One of them is by building school capacity to control success conditions (Gwennis, 1993). So are student-centered instructional models that emphasize judging student performance by outcomes. Outcomes include knowledge, skills, and behavior (Rathy et al., 2020). OBE is an educational approach considered in the planning, implementation, and assessment of curricula, rather than in events within the curricula, and to ensure that those involved are qualified in the field in which they will be involved (Pradhan, 2021; Mohd Zain et al., 2016). It is important to design an attractive, comprehensible, attainable, and coherent course with intended learning outcomes aligned with the program learning outcomes, and to ensure that the teaching and assessment strategies are closely aligned with these outcomes (L. Wang, 2011). A making the educational institution realize the pressing need for their commitment to support academic staff by providing continuing professional development to educators, and a facilitative learning environment to students that will help achieve the desired learning outcomes (Ann Ortega & Ortega-Dela Cruz, 2016).

The basic concepts that need to be mastered in educational management competencies based on lecture outcomes (outcome-based education) are related to the role and scope of the field of education management, which includes student management, curriculum, learning, educators and education staff, financing, management of educational institutions, public relations, infrastructure, educational leadership, educational evaluation, and educational supervision. Management education serves as a medium for bridging the gap between the theory taught and the development of science and technology (Mustari & Taufiq, 2014). Although Outcome-Based Education (OBE) has been widely researched from the perspectives of curriculum implementation and learning methods, few studies have developed valid and reliable instruments to measure OBE-based educational management competencies. The absence of this instrument is a significant research gap, given the increasingly urgent need to evaluate educational management competencies amid educators' limited technological mastery (60% do not yet master IT). Therefore, this research is important for developing instruments for curriculum evaluation, improving teacher quality, and supporting national and global education policies.

The main challenge is improving educational management competencies to meet the demands of OBE. Unfortunately, previous research has focused more on OBE implementation at the curriculum or learning-method level, while instruments for measuring OBE-based educational management competencies remain limited. In Indonesia, there are no standardized instruments with proven validity and reliability. This lack of measurement tools creates a research gap and practical

obstacles to curriculum evaluation, teacher quality improvement, and the development of education policy.

Given this background, this research was conducted to develop a valid and reliable OBE-based instrument to measure educational management competency. This instrument is expected to be widely used to evaluate the quality of educational management, support curriculum strengthening, improve the quality of teachers and principals, and provide a scientific basis for education policy at the national and global levels.

METHOD

Research Design and Procedures

The research method used is the development of an instrument to measure college students' education management competencies. This research was conducted in the Special Region of Yogyakarta, specifically at universities that offered undergraduate (S2) lectures in the Master of Education Management study program. The sample for this study consisted of 715 students. The reason for choosing this research design is to determine the instrument's reliability for measuring education management competencies. This research uses development (Retnawati, 2016) which consists of (1) determining the purpose of the instrument preparation; (2) search for relevant theories; (3) developing indicator constructs; (4) compiling instrument items; (5) content validation (expert judgment); (6) revision based on validator input; (7) conduct trials on respondents; (8) perform analysis; (9) assemble the instrument.

This research procedure includes:

1. In planning the competences Measure, the researcher conducted activities to prepare an initial draft of the instrument for measuring college student education management competences. This plan consists of (a) Determination of test objectives, carried out by seeking university information and reviewing literature reviews related to education management competencies. The purpose of this test is to measure the extent of problem solving competences related to education management faced by college students; (b) Determination of education management competences, in this step researchers determine the basic competencies and skills that college students need to have in education management competences; (c) Construct indicator determination, this stage is the compiler of the indicator construct used in testing the test instrument; (d) Instrument grid arrangement, the next step is compiling an instrument grid based on an assessment of the indicator construct. For each existing indicator, one question will be created, and indicators with a broader scope will comprise multiple items.
2. Content validation, this step is carried out to examine education management competences, indicators, grids, and sola items through expert judgment. This activity is conducted to establish content validity and to meet requirements regarding concept, construction, and language.
3. Instrument repair is performed to rearrange instruments that have been validated by expert judgment. It aims to improve the quality of the compiled instruments.
4. In the instrument trial, the procedure is to test the instrument in a limited way to obtain empirical data to assess whether the education management competences instrument meets the validity criteria, including reliability and good item parameters. The trial aims to estimate college students' competencies in understanding test items, assessing model fit, estimating item parameters, and identifying potential obstacles to test implementation.
5. Measurement is the last procedure in developing this research instrument. This procedure is used to determine education management competencies.

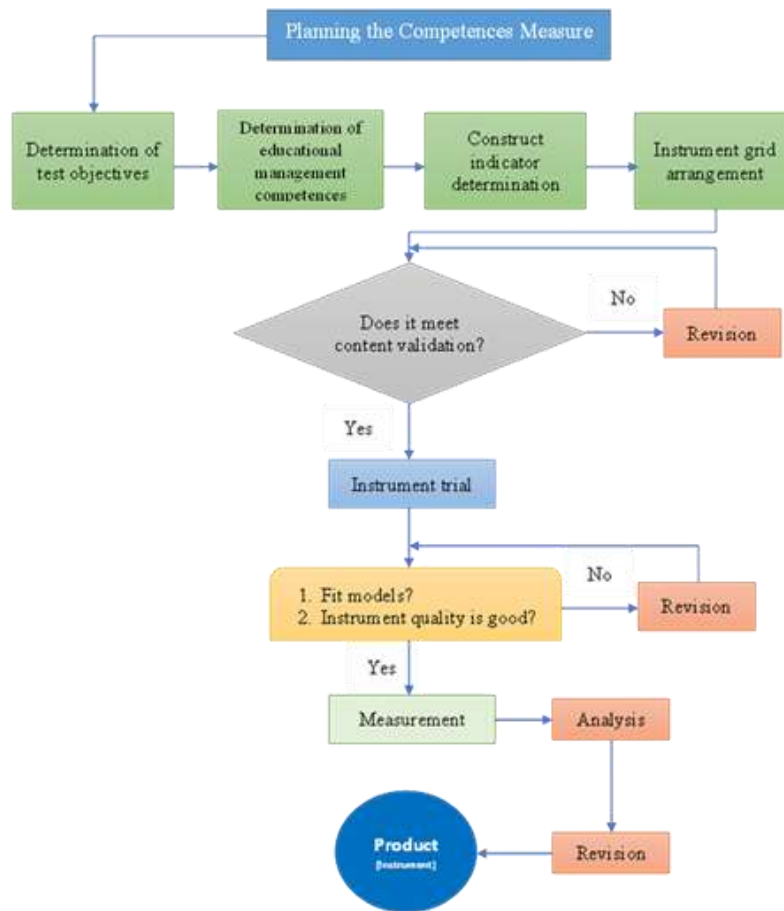


Figure 1. Instrument Development Research Procedure Flowchart

Data Collection Technique

The trial was conducted at one university, and the measurement was conducted at three universities in Yogyakarta. The trial subjects and measurement subjects were 715 college students. The technique used to select test and measurement subjects in this study was purposive random sampling. The technique used in collecting data on the test subjects and measurements is a questionnaire. Questionnaires are among the data collection techniques commonly used in research (Creswell, 2018). Often also referred to as a questionnaire (Leavy, 2017). The questionnaire used in this study is closed. The reason for using a closed questionnaire is that the researcher has predetermined the answer to each statement, and the respondent chooses one answer based on their actual opinion and circumstances. The dissemination technique in this study was implemented in two ways: offline and online via Google Forms. Alternative answers in this questionnaire include “strongly agree”, “agree”, “disagree”, “disagree”, “strongly disagree”. The questionnaire uses a Likert scale.

Data Analysis

Instrument Content Validity

Content validity is established by testing the test items as a whole through expert judgment. Validity is defined as the extent to which a test measures the test items as a whole (Abdul & Hatib, 2021). Validation is performed by comparing the prepared grids and items. The assessment is done by giving a mark on the validator's assessment. The results of this validation are intended to provide

evidence that the test content is aligned with the material to be measured. The validity formula used is the Aiken V Index (Aiken, 1985).

$$V = \sum s [n(c - 1)]$$

Information: $s = r - lo$; lo = lowest score of validity assessment (in this case, 1); c = highest score of validity assessment (in this case, 5); r = the number given by an appraiser

Construct Validity

Construct validity in this study assesses the extent to which the instrument measures the constructs it purports to measure. There are two types of construct validity: EFA (exploratory factor analysis) and CFA (confirmatory factor analysis). The analytical tools used in the EFA and CFA constructs are SPSS version 23 and LISREL 8.80, respectively.

Instrument Reliability

Reliability is the degree of consistency between two measurements of the same object (Mardapi et al., 2011). Reliability estimation aims to determine whether the instrument is consistent and stable for measuring constructs. The reliability of the instrument, as measured by the reliability index, is referred to as the reliability coefficient. Reliability was estimated using Cronbach's alpha in SPSS version 23. The instrument is considered reliable if it has a general reliability coefficient of 0.7. The formula used is as follows:

$$\alpha = \left(\frac{k}{k-1} \right) \left(1 - \frac{\sum \sigma_i^2}{\sigma^2} \right)$$

Information: σ = instrument reliability coefficient; k = the number of questions in the instrument; $\sum \sigma_i^2$ = total variance of instrument items; σ^2 = total score variance

RESULT AND DISCUSSION

Result

The development of an Outcome-Based Education competency measurement instrument is carried out as follows:

Content Validity

The validity test in this study involved 7 (seven) expert judgments as validators. Furthermore, the results of the seven experts' assessments were analyzed using the Aiken V Index. This analysis was carried out using Ms. Excel. The results of the analysis are shown in Table 1.

Table 1. Results of Content Validity Analysis - Aiken Index

No	Validator							S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	Σs	n(c-1)	V
	1	2	3	4	5	6	7										
1	4	5	5	4	5	4	5	3	4	4	3	4	3	4	25	28	0.893
2	4	4	4	5	5	5	4	3	3	3	4	4	4	3	24	28	0.857
3	4	5	5	4	5	4	5	3	4	4	3	4	3	4	25	28	0.893
4	4	5	4	5	5	4	4	3	4	3	4	4	3	3	24	28	0.857
5	4	5	4	5	4	4	4	3	4	3	4	3	3	3	23	28	0.821
6	4	4	5	5	4	5	4	3	3	4	4	3	4	3	24	28	0.857
7	4	4	4	5	5	5	4	3	3	3	4	4	4	3	24	28	0.857
8	4	5	4	5	5	5	4	3	4	3	4	4	4	3	25	28	0.893
9	4	5	5	4	4	5	5	3	4	4	3	3	4	4	25	28	0.893
10	5	5	5	5	4	5	4	4	4	4	4	3	4	3	26	28	0.929
11	4	4	5	4	5	5	5	3	3	4	3	4	4	4	25	28	0.893
12	4	4	4	4	5	5	5	3	3	3	3	4	4	4	24	28	0.857
13	5	5	4	4	5	4	5	4	4	3	3	4	3	4	25	28	0.893

No	Validator							S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	S ₇	Σs	n(c-1)	V
	1	2	3	4	5	6	7										
14	5	4	4	4	5	4	4	4	3	3	3	4	3	3	23	28	0.821
15	5	4	5	4	4	5	4	4	3	4	3	3	4	3	24	28	0.857
16	4	5	5	4	5	4	4	3	4	4	3	4	3	3	24	28	0.857
17	4	5	4	4	4	4	5	3	4	3	3	3	3	4	23	28	0.821
18	5	5	5	4	4	5	5	4	4	4	3	3	4	4	26	28	0.929
19	4	4	5	4	4	5	4	3	3	4	3	3	4	3	23	28	0.821
20	4	4	4	4	4	5	5	3	3	3	3	3	4	4	23	28	0.821
21	5	4	4	4	5	5	5	4	3	3	3	4	4	4	25	28	0.893
22	4	5	5	4	4	5	5	3	4	4	3	3	4	4	25	28	0.893
23	5	4	4	5	4	4	4	4	3	3	4	3	3	3	23	28	0.821
24	5	4	5	4	4	5	4	4	3	4	3	3	4	3	24	28	0.857
25	5	4	5	5	5	4	5	4	3	4	4	4	3	4	26	28	0.929
26	4	4	5	4	4	4	5	3	3	4	3	3	3	4	23	28	0.821
27	4	5	4	4	4	5	4	3	4	3	3	3	4	3	23	28	0.821
28	4	4	4	4	4	4	4	3	3	3	3	3	3	3	21	28	0.750
29	4	5	5	5	5	4	5	3	4	4	4	4	3	4	26	28	0.929
30	5	4	4	4	5	5	5	4	3	3	3	4	4	4	25	28	0.893
31	5	5	4	4	5	4	4	4	4	3	3	4	3	3	24	28	0.857
32	5	5	5	4	4	4	5	4	4	4	3	3	3	4	25	28	0.893
33	4	5	4	4	4	5	4	3	4	3	3	3	4	3	23	28	0.821
Rata-rata indeks Aiken V																	0.864

Based on the results of the content validity test above, item 28 is valid in the moderate category, and all items are valid in the high category. Aiken's V coefficient values range from 0 to 1 (Lewis-Beck et al., 2004). Thus, the results of the content validity analysis above are in the range 0-1. Based on the Aiken V index, an item or device can be categorized according to its index (de Toni et al., 1995). If the index is less than or equal to 0.4, it is considered to have low validity; 0.4-0.8 indicates moderate validity; and values greater than 0.8 indicate very high validity (Guzmán et al., 2019). Thus, the statement items from the content validity analysis above are valid.

Construct Validity

Construct validity in this study used Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). EFA analysis is carried out to build a measurement system that provides a basis for describing results, thereby creating a set of values with many new variants that replace several indicators. EFA analysis using SPSS version 24.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,982
Bartlett's Test of Sphericity	Approx. Chi-Square	11306,099
	df	528
	Sig.	,000

The results of the analysis above show that the KMO value is 0.982, which is > 0.05 . This means that the instrument being analyzed has an adequate model. So that it can be continued for CFA analysis. The next analysis aims to determine the number of factors in the instrument, as shown in the scree plot. Figure 1 is the result of scree plot analysis.

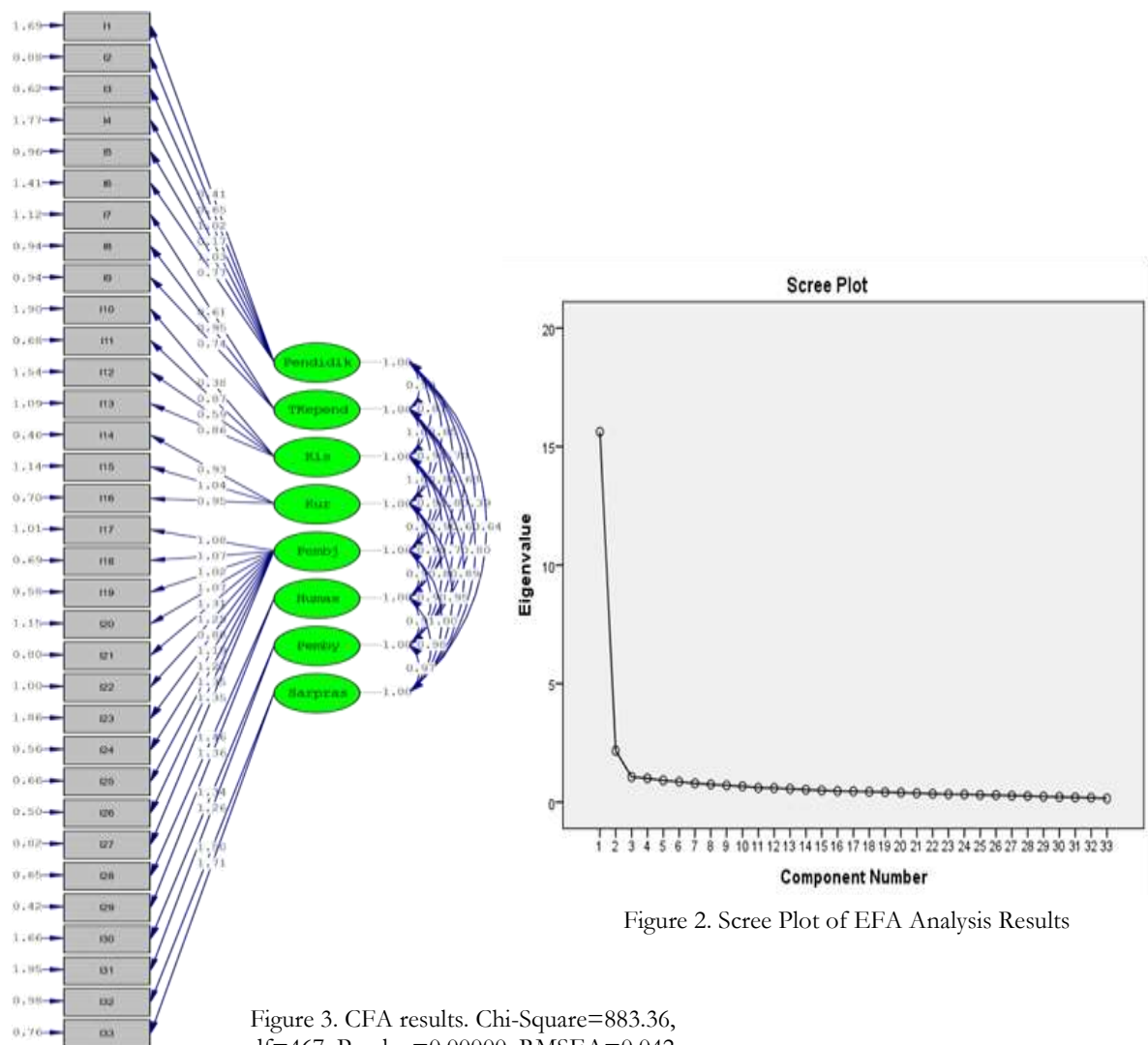


Figure 2. Scree Plot of EFA Analysis Results

The results of the Scree plot in Figure 1 above indicate that the eigenvalues begin to decrease at the second factor. This shows that a dominant factor influences the measurement of college students' competence in educational management. These results show that the instrument meets the unidimensional assumption, i.e., it measures 1 dominant factor. Construct validity was then analyzed using Confirmatory Factor Analysis (CFA). The purpose of this analysis is to test indicators grouped by constructs, consistent with those constructs. CFA analysis in this study was carried out using LISREL 8.80. The results of the analysis are shown in Figure 2. Based on the analysis above, all the items compiled were valid. This is because there are no red loading factor results.

Goodness of Fit

Goodness-of-fit, or item fit, assesses whether the proposed model fits the data or the sample. This study uses the GOF chi-square size with a critical value of $0 \leq X^2 \leq 2df$, p-value with a critical value of $0.05 \leq X^2 \leq 1.00$, Root Mean Square Error of Approximation (RMSEA) with a critical value of $RMSEA \leq 0,08$, standardized Root Mean Residual (SMRM) with a critical value of $SRMR \leq 0.05$, Comparative Fit Index (CFI) with a critical value of $CFI > 0.97$, and Normed Fit Index (NFI) with a critical value of $NFI > 90$ (Hair, 2010). Table 2 below presents the results of the GOF analysis.

Table 2. Goodness of fit

GOF	Critical value	Result	Decision
Statistics X^2	$0 \leq X^2 \leq 2df$	$df = 467; X^2 = 883,6$	Fit
p-Value	$0,05 \leq X^2 \leq 1,00$	0,079	Fit
RMSEA	$RMSEA \leq 0,08$	0,042	Fit
SRMR	$SRMR \leq 0,05$	0,030	Fit
CFI	$CFI > 0,97$	0,990	Fit
NFI	$NFI > 0.90$	0,989	Fit

Table 2 is the result of the GOF measure. The results in Table 2 indicate that the CFA model for happiness, as indicated by the GOF chi-square, P-value, RMSEA, SRMR, CFI, and NFI, is a good fit. Based on the results above, the instruments arranged show all GOF fit measures. Overall, the sample covariance matrices differ little from the estimated covariance matrix, so the compiled instruments are suitable for the model used.

Discussion

The results of the content validity test using the Aiken V index showed that most instrument items scored above 0.8, with an average of 0.864, indicating high validity. Only one item fell into the moderate category (0.750), indicating the need for editorial adjustments to better reflect the intended construct. Overall, these findings confirm that the formulated indicators align with the OBE-based educational management competency domain as perceived by experts. From a critical perspective, these results indicate that the instrument is not only theoretically sound but also supported by strong content validity from experts, thereby providing a credible basis for measurement. The presence of one item with a moderate score is an important consideration to ensure that the revision process is not neglected, as instrument quality is determined by the consistency between items in representing core competencies.

The practical implications of the Aiken V results are quite significant. First, the instrument can be used for curriculum evaluation, particularly in assessing the extent to which educational management curricula have been designed in accordance with OBE principles. Second, this instrument supports efforts to improve the quality of teachers and principals by mapping their managerial competency strengths and weaknesses, for example, in the low utilization of learning technology (60% of teachers are not yet IT-savvy). Third, robust content validation results also strengthen the instrument's legitimacy as a supporting tool for education policy, both in the national context, which encourages the implementation of OBE in higher education, and in the global context, which emphasizes accountability and educational quality. Thus, reflection on the results of Aiken V confirms that this research not only produces a conceptually valid instrument but also provides a practical tool for the evaluation, development, and policymaking of OBE-based education.

The results of the study indicate that the developed OBE-based educational management competency instrument has high validity and reliability, as evidenced by an Aiken V index above 0.8, a KMO value of 0.982, and CFA results that meet the goodness-of-fit criteria. Critically, these findings indicate that the instrument items are not only theoretically relevant but also consistent in measuring the construct of educational management competency. Interestingly, the unidimensionality results indicate that educational management competency can be represented by a single dominant factor, which confirms the cohesion among indicators and strengthens the legitimacy of using this instrument in evaluation practice. Based on the results of the analysis above, the education management competency development instrument is ready for use in measurement. One of the quality instruments is considered such because it has been tested through various analyses (Doward et al., 2004; Wagner et al., 1999). This statement aligns with the one that says the main purpose of the pre-test instrument is to identify which questionnaire statements can be

interpreted. The difficulty of each item is clear, so respondents can fill in according to their own condition by easily understanding each item statement.

The purpose of the pre-test of a research instrument is to identify whether there are problems in understanding the way in which a question was formulated, the adequacy of the meaning that it communicates, and if the different respondents interpret a question in a different way from what the researcher wants to convey (Nofrida et al., 2022).

Instrument development following systematic steps can yield optimal, valid results (Abdurrahman & Mahmudah, 2023). This is shown in the items that fit (Aladwani & Palvia Aladwani, 2002). The fit points are part of the psychometric properties. The instrument measures were found to have satisfactory psychometric properties (Sanchez-Balcells et al., 2018). The main activities in psychometrics within the framework of instrument development are theory construction, instrument validation, and item-indicator testing on the instrument. The methodological techniques used are clear, in line with the rules of instrument development.

An instrument for evaluating the quality, performance measurement level, and results is presented. The instrument is based on the classification of quality into categories and classes; for each category, the evaluation objects, methodologies, techniques, and indicators most useful and commonly used for quality measurement and control are described (Sastre-Rus et al., 2019; Schröder & Lundqvist, 2022).

This statement can be interpreted as the development of the instrument begins with constructing a theory. Next, conduct testing to produce high-quality measurement instruments. All instruments should be based on a stated model or theory of the construct being measured (Mohamad et al., 2015). The key is that a quality instrument can produce quality data. That is, the respondents properly completed the questionnaire and did not just fill it out. Respondents understood each item, read it, and answered accordingly, reflecting the conditions as written in the questionnaire. Therefore, criteria for good-quality instruments include the validity and reliability testing stages, the level of difficulty, discriminatory power, and distractors (Rubio et al., 2003). Periodic instrument testing aims to obtain the suitability of the indicators and the achievement of the indicator aspects compiled in each measurement (Boateng et al., 2018; Sullivan, 2011).

Compared with previous literature, this study addresses an existing gap. Most previous studies have focused on implementing OBE in curriculum design or learning strategies (Asim et al., 2021; Rathy et al., 2020), but few have emphasized developing validated instruments to measure educational management competencies. In fact, research in Indonesia remains limited to conceptual exploration or the adaptation of OBE practices, without standardized instruments with proven psychometric validity and reliability (Mustari & Taufiq, 2014). Therefore, the results of this study not only address this gap but also make a methodological contribution by providing an instrument that can be used in practice across various educational contexts.

The argument structure of this finding demonstrates three main contributions. First, academically, this study enriches the instrument development literature by providing evidence that educational management competencies can be measured validly and reliably using the OBE framework. Second, in practice, this instrument can be used by educational institutions to evaluate the effectiveness of learning management, particularly in addressing the challenge of low technological proficiency among teachers (60% are not yet IT-savvy). Third, from a policy perspective, this instrument can serve as a basis for strategic decision-making to support national and global agendas aimed at improving educational quality. Thus, this study confirms that instrument availability is not only a technical requirement but also a strategic element for the successful implementation of OBE in Indonesia and internationally.

CONCLUSION

This study successfully developed and validated an Outcome-Based Education (OBE)-based instrument to measure educational management competencies, demonstrating strong content and construct validity and high reliability indices. Theoretically, the research enriches educational measurement studies by demonstrating that educational management competencies can be represented within a unidimensional OBE framework. In practice, the instrument provides educators, institutions, and policymakers with a credible tool for curriculum evaluation, teacher training, and quality assurance, particularly relevant to addressing the challenge of limited technological mastery among teachers in Indonesia. The implications highlight this instrument's potential to strengthen institutional performance and support the national OBE implementation agenda in higher education. Despite these contributions, the study is limited to a sample of master's students in Yogyakarta and relies on a single validation approach. Therefore, future research is recommended to broaden the sample across different educational levels, test the instrument in varied cultural and international contexts, and employ alternative psychometric methods such as the Rasch model or Generalizability Theory. Such efforts will enhance the instrument's generalizability, robustness, and global applicability, advancing both educational practice and policy.

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