
Empowering Higher Education Budgeting through Human Resource Competence: An Empirical Study Aligned with SDG 4

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Abstract

This study aims the impact of human resource (HR) competence on budget planning, implementation, and evaluation in higher education institutions, within the context of achieving Sustainable Development Goal (SDG) 4. Using a quantitative approach with a hypothesis-testing design, the study collected primary data through questionnaires distributed to 70 respondents, consisting of lecturers and financial staff at Semarang State University. The data were analyzed using multiple linear regression, following tests for validity, reliability, and classical assumptions. The results indicate that HR competence has a positive and significant influence on all three stages of the budgeting process. Competent HR contributes to more effective financial decision-making, better alignment of budget allocations with institutional goals, and improved accountability in budget execution. These findings highlight the strategic role of human resources in enhancing public financial governance in higher education and support the need to strengthen HR capacity for more transparent and performance-based budgeting.

Keywords

Human resources; budget planning; budget implementation; budget evaluation; higher education.

INTRODUCTION (TAHOMA 10 BOLD, UPPERCASE)

Education is the primary foundation for developing high-quality and competitive human resources (HR). In the context of higher education, the education budget plays a vital role in ensuring the sustainability of academic programs, improving the quality of learning, research, and community service. However, the effectiveness of education budget implementation is not solely determined by the amount of funds allocated, but is also greatly influenced by the quality and capacity of the human resources managing the budget (Altbach, Reisberg, & Rumbley, 2009).

Human resources in the context of education budget management include lecturers, educational staff, financial managers, and policymakers at the faculty and university levels. Their capacity to plan, implement, and evaluate budgets is crucial for determining whether the budget is used efficiently, effectively, and contributes to improving the quality of higher education (Guthrie, Lawrence, English, & Dumay, 2015). Low human resource capacity can lead to budgeting that is not based on actual needs, suboptimal budget implementation, and weak monitoring and evaluation systems (Marques, Ribeiro, & Scapens, 2011).

Several studies have shown that human resource capacity in budget management is closely related to transparency, accountability, and the successful implementation of educational organizations' financial strategies (Sangster, Leech, & Grabski, 2009). Furthermore, financial literacy, technical competence, and managerial skills also contribute significantly to the successful management of educational institutions' budgets (Zhang & Zhu, 2015).

Several previous studies have highlighted the importance of budget management in the public and education sectors, but studies specifically linking human resource quality to the implementation of education budgets in higher education are still relatively limited, particularly in Indonesia (Cohen, Doumpos, & Zopounidis, 2012). However, within the framework of higher education autonomy and demands for public accountability, the capacity and competence of human resources are becoming increasingly crucial to study (Teeroovengadum, Kamalanabhan, & Seebaluck, 2016).

This study aims to analyze the extent to which human resource quality and capacity influence the implementation of education budgets in higher education institutions. Using a quantitative approach and data collection through questionnaires from various work units within higher education institutions, it is hoped that this research will contribute to the formulation of more targeted strategies for improving human resource capacity and promoting the effective use of education budgets.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Human resource (HR) capability is widely recognized as a critical factor in the effectiveness of public financial management, including the budgeting process. According to Barney (1991), the Resource-Based View (RBV) theory posits that competent human resources are valuable, rare, inimitable, and non-substitutable resources that contribute to an organization's strategic advantage. In budgeting, HR capability includes not only technical skills but also cognitive abilities, experience, and integrity in managing public funds (Zhang & Zhu, 2015). HR that possesses strong budgeting literacy, decision-making skills, and a clear understanding of financial regulations enhances the institution's ability to allocate resources effectively and accountably.

Budget planning is the foundational stage in the budgeting process and is essential for aligning financial resources with institutional goals. Marques, Ribeiro, and Scapens (2011) emphasize that successful budget planning requires accurate forecasting, stakeholder involvement, and technically skilled personnel who can analyze needs and design responsive budget frameworks. In higher education, the complexity of funding sources and performance targets makes the role of skilled HR in planning even more critical (Cohen, Doumpos, & Zopounidis, 2012).

Effective budget implementation depends on how well plans are translated into actions. According to Christensen and Lægreid (2011), the principles of New Public Management (NPM) stress the importance of managerial autonomy and accountability, requiring HR that is both competent and ethically responsible. Human resources involved in budget execution must ensure that expenditures are in line with the approved budget and institutional priorities. Cohen et al. (2012) found that public institutions with highly competent HR are better at minimizing budget deviations and achieving financial targets.

Budget evaluation involves reviewing and assessing how effectively financial plans were executed and whether the intended outcomes were achieved. Teeroovengadum, Kamalanabhan, and Seebaluck (2016) argue that meaningful evaluation is only possible when human resources understand performance indicators and possess analytical skills to interpret financial outcomes. Budget evaluation is also essential for improving future planning and increasing transparency.

The importance of competent human resources in budgeting processes is increasingly emphasized within the broader framework of the United Nations Sustainable Development Goals (SDGs). In particular, SDG 4, which focuses on ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all, places significant demands on higher education institutions to manage educational budgets effectively, transparently, and

accountably. Achieving the targets under SDG 4 requires not only adequate financial resources but also strong institutional capacity, including skilled personnel capable of planning, implementing, and evaluating education-related budgets (UNESCO, 2020).

Human Resources Competency and Budget Planning

The Resource-Based View (RBV) emphasizes that organizational excellence relies on valuable, rare, difficult-to-imitate, and irreplaceable internal resources—including human resource competencies (Barney, 1991). In the context of higher education budget planning, human resource competency is a strategic factor determining the quality of the planning process, from needs analysis and program development to efficient and targeted resource allocation. New Public Management (NPM) theory also reinforces the importance of professional and adaptive human resources in supporting accountable and results-oriented public sector financial governance (Hood, 1995; Christensen & Lægreid, 2011). Several studies support this view, such as Marques, Ribeiro, and Scapens (2011), who found that low planning capacity in public sector institutions is rooted in weak human resource technical competencies. Similarly, research by Zhang and Zhu (2015) shows that fiscal literacy and analytical skills of human resources play a significant role in producing effective budget planning. Therefore, human resource competency is seen as an important determinant in improving the quality of educational budget planning in higher education, which ultimately impacts the effectiveness of overall educational fund management.

Human Resources Competency and Budget Implementation

Based on the New Public Management (NPM) theory, the successful implementation of education budgets in higher education is greatly influenced by the competence of human resources (HR) who carry out managerial and technical functions. NPM emphasizes the principles of efficiency, effectiveness, and accountability in the management of the public sector, including higher education institutions, thus demanding professional, adaptive HR with adequate budget literacy. Competencies that include the ability to plan, implement, and evaluate budgets are crucial in ensuring that education budgets are used optimally and on target (Hood, 1995; Christensen & Lægreid, 2011). Thus, HR competence is seen as a strategic factor that influences the level of success of education budget implementation in the era of modern public governance.

Human Resources Competency and Budget Evaluation

This research refers to the Resource-Based View (RBV), which emphasizes that the performance excellence of public organizations, including universities, is highly dependent on the quality of their internal resources, one of which is human resource competence (Barney, 1991). In the context of education budget evaluation, human resource competence plays a crucial role because the evaluation process requires analytical skills, an understanding of performance indicators, and integrity in assessing the effectiveness and efficiency of budget use. New Public Management (NPM) theory also emphasizes the importance of accountability and outcome measurement in the public sector, which requires professional, trained human resources capable of conducting objective and systematic performance-based evaluations (Hood, 1995; Christensen & Lægreid, 2011). Previous research supports this view, with Marques, Ribeiro, and Scapens (2011) finding that weak evaluation capacity in public sector organizations is caused by the low technical and analytical skills of budget implementers. Furthermore, Cohen, Doumpos, and Zopounidis (2012) revealed that improving HR competency in the evaluative aspect is positively correlated with the effectiveness of the feedback process and improved budget management. Thus, HR competency is a crucial determinant in the education budget evaluation process in higher education institutions, which aims to ensure transparency, accountability, and improve the quality of education fund management.

H1 : Human Resources Competency has a Positive Influence on Budget Planning

H2 : Human Resources Competency has a Positive Influence on Budget Implementation

H3 : Human Resources Competency has a Positive Influence on Budget Evaluation

METHODS

This study adopts a quantitative approach with a hypothesis-testing design to examine the relationships between variables using primary data collected through questionnaires. The research instrument employs a 5-point Likert scale and is administered to respondents comprising educational staff and lecturers involved in financial management across 9 faculties, 2 institutes, 1 postgraduate school, and 1 financial bureau at Universitas Negeri Semarang. A total of 70 respondents were targeted. The sampling technique used is proportional sampling, ensuring that each organizational unit is proportionally represented in the study.

Prior to conducting multiple linear regression analysis, the data were first tested using validity, reliability, and classical assumption tests (including normality) to ensure the Best Linear Unbiased Estimator (BLUE) regression estimation properties were met. The analysis was conducted to determine the effect of independent variables on the dependent variable based on data that met statistical requirements. The data analysis tool used was SEM PLS.

RESULTS AND DISCUSSION

The research instrument was subjected to validity and reliability tests, with all items confirmed to be both valid and reliable. Consequently, the instrument is deemed appropriate for measuring each of the variables under investigation. The results of the hypothesis testing are presented as follows:

Table 1
Hypotesting Test

Hypothesis	P value	Sign	Results
H1 : HR competency \square budget planning	0.583	(<0,001)	H1 accepted
H2: HR competency \square budget implementation	0.216	(0.028)	H2 accepted
H3: HR competency \square budget evaluation	0.432	(<0,001)	H3 accepted

The Influence of HR Competency to Budget Planning

The influence of human resources on budget preparation is a critical area of concern, as human resources constitute a key internal factor that significantly determines the success or failure of an organization in achieving its objectives (Sholihah et al., 2015). Effectively and efficiently managed, high-quality human resources play an essential role in driving the attainment of organizational goals, including the preparation of budgets. The results of the first hypothesis test (H1) indicate that human resource competence has a significant positive effect on budget preparation. This finding suggests that the quality of human resources contributes meaningfully to the effectiveness of budget formulation processes in higher education institutions. These results are consistent with previous studies conducted by Lubis et al. (2021), Ismid et al. (2020), and Fitri (2013), which also affirm the critical role of HR competence in public sector budgeting.

This finding is consistent with the Resource-Based View (RBV) theory proposed by Barney (1991), which asserts that an organization's competitive advantage is primarily derived from the quality of its internal resources, including competent human capital. In this context, human resources with strong capabilities in budget literacy, strategic planning, and a sound understanding of financial regulations are more likely to produce budget documents that not only adhere to procedural standards but also effectively align with and support the institution's strategic objectives.

Previous studies lend strong support to this assumption. Marques, Ribeiro, and Scapens (2011) found that the quality of budget planning is closely linked to the technical expertise and practical experience of the personnel involved in the budgeting process. Similarly, Zhang and Zhu (2015) highlighted that effective fiscal planning in the public sector is

significantly shaped by the competency of human resources, particularly in assessing institutional needs and formulating comprehensive budget scenarios. Within the context of higher education, Teeroovengadam et al. (2016) underscored the critical need to enhance human resource capacity in managerial functions, as this plays a pivotal role in ensuring efficient allocation of funds and the successful implementation of academic programs.

Work organizations are expected to cultivate both the technical skills and cognitive abilities of their personnel to enable effective problem-solving and sound decision-making in budgeting processes. Employees should ideally possess an educational background, potential, talents, personality traits, and work motivation that align with the specific demands of their roles in budget-related functions.

The Influence of HR Competency to Budget Implementation

The test results indicate that human resource competency has a positive influence on the implementation of budgets in higher education institutions, consistent with the hypothesis formulated earlier. Human resources are one of the key determinants of organizational effectiveness, as they utilize their physical and psychological capacities to achieve institutional objectives. In this context, higher education institutions must be capable of actualizing the collective aspirations of their members. As key actors in the implementation of education budgets, universities play a vital role in fulfilling societal expectations and contributing to broader educational development goals (Iqbal, 2025).

This perspective is in line with the Resource-Based View (RBV), which posits that organizations can achieve operational excellence and effectiveness when supported by valuable, rare, and inimitable internal resources—such as highly competent human capital (Barney, 1991). In this context, human resource competence serves as a strategic driver in ensuring that planned budgets are executed efficiently, in a timely manner, and in alignment with institutional goals. Moreover, this view also resonates with the principles of New Public Management (NPM), which emphasize efficiency, performance outcomes, and professionalism in the governance of the public sector, including budget administration. NPM advocates for public officials to act responsively, responsibly, and skillfully in implementing programs that are guided by budgetary frameworks (Hood, 1995; Christensen & Lægreid, 2011).

Previous research further reinforces the relevance of this relationship. Marques, Ribeiro, and Scapens (2011) demonstrated that limited human resource competency can hinder effective budget implementation and contribute to deviations in fund allocation. Similarly, Cohen, Doumpos, and Zopounidis (2012) found that public sector organizations with highly skilled personnel in budget execution and oversight tend to achieve greater operational efficiency. Within the education sector, Teeroovengadam et al. (2016) emphasized that the successful implementation of academic programs is closely linked to the capacity of human resources to consistently and accountably execute financial plans.

Employee competence in higher education institutions plays a vital role in the planning, implementation, and control of organizational operations. Therefore, it is essential to ensure that higher education personnel are managed effectively to enable them to make optimal contributions toward achieving institutional objectives. Employees must possess expertise and skills that are not only relevant to their professional field but also aligned with their specific job responsibilities. Prior studies by Outu (2016), Harahap (2020), Sulistiyani (2021), and Saputra (2022) have shown that a high level of human resource competence significantly enhances the success of performance outcomes in executing programs and responsibilities that must be accounted for to stakeholders.

The Influence of HR Competency to Budget Evaluation

Human resource (HR) competence is a strategic determinant that significantly influences the effectiveness of budget evaluation, particularly within the context of education budget management in higher education institutions. Budget evaluation functions not only as a mechanism for monitoring and control but also as a critical foundation for informed financial decision-making in future periods. This process demands HR personnel who possess strong analytical capabilities, a solid understanding of financial performance indicators, and the

integrity and objectivity necessary to assess the extent to which budget implementation aligns with initial planning.

This aligns with the Resource-Based View (RBV), which posits that an organization's strengths are largely determined by the quality, rarity, and inimitability of its internal resources—one of which is human resource competence (Barney, 1991). Competent human resources represent a critical asset in ensuring that budget evaluations are conducted thoroughly and accurately, ultimately enhancing institutional efficiency, transparency, and accountability.

Several studies support this theoretical framework. Marques, Ribeiro, and Scapens (2011) revealed that the success of reforms in budget evaluation and control systems within the public sector largely depends on the preparedness and competence of human resources. Similarly, Cohen, Doumpos, and Zopounidis (2012) asserted that effective budget evaluation is strongly associated with the ability of personnel to accurately comprehend, assess, and utilize financial information. In the context of higher education, Teeroovengadum, Kamalanabhan, and Seebaluck (2016) emphasized that results-based evaluation in academic institutions can only be meaningful when it is supported by human resources who possess a solid understanding of performance measurement and budget governance.

CONCLUSION

The findings of this study demonstrate that human resource (HR) competency has a positive and significant influence on the planning, implementation, and evaluation of education budgets in higher education institutions. This suggests that higher levels of HR competency lead to more effective budget management—characterized by systematic planning, efficient execution, and accountable evaluation. Grounded in the Resource-Based View and New Public Management theories, the study affirms that HR professionals equipped with technical expertise, regulatory knowledge, and professional integrity are essential to fostering transparent and results-oriented financial governance. Accordingly, higher education institutions must prioritize continuous capacity building through targeted training programs, selective recruitment practices, and the cultivation of a performance-driven organizational culture. These initiatives not only enhance budget efficiency but also support the attainment of strategic institutional objectives and contribute to the broader sustainable development agenda, particularly Sustainable Development Goal (SDG) 4 in the area of quality education.

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