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# Management Control System in Higher Education Institutions and Its Role on Performance: Does Gender Matter?

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**Research aims:** This study examines the effect of management control system (MCS) implementation consisting of three dimensions: input, output, and behavioural, on the performance of study programs in private Higher Education Institutions (HEIs). Also, this study tests whether there is a moderating impact of gender.
**Design/Methodology/Approach:** This study uses a questionnaire survey approach and statistical hypothesis testing. The population of this study is permanent lecturers at private HEIs in Indonesia who and are subject to the MCS policy. Meanwhile, the SEM-PLS technique was used to test the hypothesis.
**Research findings:** Involving 291 lecturers as samples, this study found that in overall data, output and behavioural controls had a positive effect on performance, while input controls did not. The results of moderation testing using a split sampling indicated that in the Male group only behavioural control had a positive influence on performance. Meanwhile, in the female group, behaviour and output control influence performance. In other words, gender moderates the relationship between output control and performance, which means that output control needs to be emphasized more in women.
**Theoretical contribution/Originality:** This study presents a new discussion on how MCS policies aimed at improving the performance of HEIs need to pay attention to gender issues.
**Practitioner/Policy implication:** In fact, women and men have different ways of working and levels of sensitivity in responding to certain information and policies. Therefore, in the case of implementing MCS in HEIs, slight differences in treatment regarding gender differences are needed to make MCS have an optimal impact on performance.
**Keywords:** Gender; Higher Education Institutions; Management Control System; Performance

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## Introduction

The application of management control systems (MCS) in higher education institutions (HEIs) has become an increasingly interesting topic in recent years, both globally and nationally. Globally, MCS is used to ensure the effective and efficient use of resources, support data-driven decision-making, and improve organizational performance (Ngindana et al., 2020). Many countries, HEIs face pressure to improve competitiveness, operational efficiency, and align with global standards of good governance. This transformation is often driven by the influence of neoliberalism and commercialization, which create a higher education culture that emphasizes efficiency, competition, and market values (Ball, 2012; Halligan et al., 2010; Parker and Crona, 2012; Parker et al., 2009).

In Indonesia, the implementation of MCS has become a priority to support transparent and accountable governance in HEIs. Moreover, MCS serves as a framework for managing the unique challenges faced by local universities, including social dynamics such as gender issues. One important

aspect of HEI governance development is gender emancipation, given the increasingly prominent role of women in the academic environment. Data shows that the number of female students in Indonesia exceeds that of male students, with 3,099,783 (48.82%) female students compared to 3,250,158 (51.18%) male students. However, the data on faculty members shows a male dominance, with 166,789 (56.38%) male lecturers compared to 129,061 (43.62%) female lecturers (https://pddikti.kemdikbud.go.id, 2024). Although the number of female lecturers has surpassed the national minimum standard for formal employment at 30%, this gender gap remains relevant for further analysis. For example, the low representation of women in managerial positions in HEIs can influence policies, including how MCS is designed and implemented. Therefore, it is crucial to consider gender issues in the formulation of MCS policies to make them more inclusive and responsive to the needs of all parties.

The Indonesian government has adopted a new public management (NPM) approach that encourages the implementation of MCS to improve the performance and competitiveness of higher education institutions. Although this approach has widespread impact, the relevance of gender in MCS policies is often overlooked. This study aims to examine how MCS affects the performance of study programs in HEIs with gender as a moderator, and to offer recommendations for designing more inclusive MCS. The existing literature highlights the importance of MCS in supporting organizational performance, including in HEIs (Alkhafaji et al., 2018). Some studies have also started to incorporate gender issues in the context of MCS, but the number remains very limited. Previous studies have mostly focused on the interaction between MCS and management mindsets that lead to gender-based policies. However, there has been little research on how MCS is differently responded to by different genders or how gender moderates the relationship between MCS and performance. This research aims to fill that gap by providing new insights into the impact of MCS on the performance of study programs in HEIs and the role of gender in moderating this relationship.

This research is expected to contribute both theoretically and practically. Theoretically, this study contributes to the discussion of the MCS gender interaction in HEI governance, while enriching the literature on gender in organizations. Practically, the results of this research are expected to provide input for policymakers to design MCS that is more adaptive to gender differences, thus ensuring that management control objectives and performance improvement can be optimally achieved. This framework emphasizes the importance of balancing control and autonomy among employees and its relevance to improving organizational performance. Therefore, this study is not only relevant to the context of Indonesia but also provides insights that can be applied globally.

## Literature Review and Hypotheses Development

### Gender and MCS Implementation

Understanding gender dynamics in the workplace is crucial for effective MCS implementation. Research has shown that the challenges faced by women in leadership and management roles can impact their performance and participation (Connell, 2006; Eagly & Chin, 2010). Gender is a defining feature of most organizations, as it not only structures but also constitutes organizational and managerial realities (Broadbridge & Hearn, 2008). One key aspect to consider is the influence of gender similarity between supervisors and subordinates on the quality of their relationship, and the subsequent effect on organizational citizenship behavior (Ghaus et al., 2018). Gender may be a pertinent demographic variable that can influence social processes in the organizational context, such as the supervisor-subordinate dyadic relationship and its impact on the relationship between leader-member exchange and organizational citizenship behavior.

Perceptions of effective leadership also differ between genders and management levels (Muchiri et al., 2011). Males and non-management employees tend to emphasize fairness, equality, and honesty, while female employees highlight communication, decision-making ability, and supporting the leader. Employees at the management level, on the other hand, underscore vision, supporting the leader, and integrity as important to organizational leadership effectiveness. These findings suggest that MCS implementation must consider gender-specific needs and preferences to ensure effective adoption and engagement from all employees. By understanding and addressing the unique challenges faced by women in leadership roles, organizations can create a more inclusive and equitable environment that enables all employees to thrive (Eagly & Chin, 2010). Furthermore, recognizing the influence of gender on perceptions of effective leadership can help organizations design MCS that resonate with diverse employee populations and foster a sense of shared purpose and commitment.

The implementation of MCS in HEIs in Indonesia has been a topic of growing interest in recent years. One study on quality control in private HEIs in Jakarta found that the implementation of management control systems had varying impacts on faculty and staff, which the researchers attributed in part to gender differences (Muktiyanto et al., 2020). As such, the issue of gender differences in the response to MCS is also an important consideration. Using a longitudinal case study Van den Besselaar and Sandström (2016) discovered that male researchers' productivity increased faster than female researchers' productivity over a 10-year period, but male and female researchers' field-normalized (relative) citation impact indicators remained roughly equal. Furthermore, performance data help to explain why male careers in their sample advance much faster than female careers; however, even after controlling for performance differences, they find that gender is an important determinant.

In another context, Wittbom (2015) studied the gendered aspects of MCS. Their study is based on the gender mainstreaming perspective that is a global strategy for promoting gender equality. The question raised in their study is how the MCS performs under the pressure of integrating gender into a core business. They found that the MCS appears to impede gender equality. In a technocratic core business, the control system fails to promote gender mainstreaming. In their paper, the control of a gender-equal transport system yields a quantitative perspective on women and men rather than a qualitative gender perspective on the transportation system.

While Efferin et al. (2016) discovered that in a gendered society, a female leader will earn full respect if she demonstrates leadership behaviours that align with her subordinates' gendered expectations. The leader's and followers' shared gendered cultural background will result in leadership and followership that complement one another. Gendered leadership generates gendered MCS. Gendered MCS is based on gendered cultural values that guide organisational members' behaviour to focus on specific competencies from a single gender perspective. In turn, gendered MCS supports and reinforces gendered leadership.

### Contingency Theory

This study conceptual framework is constructed beads on contingency theory point of view. This theory posits that the effectiveness of management practices, including control systems, depends on various contextual factors, such as organizational environment, structure, and strategy (Shala et al., 2021). This theory can help explain how MCS interacts with organizational performance and how gender might influence this relationship. According to this perspective, different control systems may be used to achieve different types of organizational performance (Alkhafaji et al., 2018). Research has shown that performance assessment systems, which are a key component of MCS, can have a significant impact on organizational outcomes.

These systems are designed to set performance standards, collect and communicate information on actual performance, and take corrective action where necessary (Dávila, 2019). However, the gender

issue becomes relevant, as some studies have suggested that women and men may respond differently to performance evaluation and control systems (Herath, 2007). As such, the gender composition of the personnel responsible for implementing and operating the management control system within HEIs may play a crucial role in determining its overall effectiveness and the subsequent impact on the performance of study programs (Morgan et al., 2002; Ngindana et al., 2020). Based on the above arguments, the conceptual framework of this study is formulated as depicted by Figure 1.

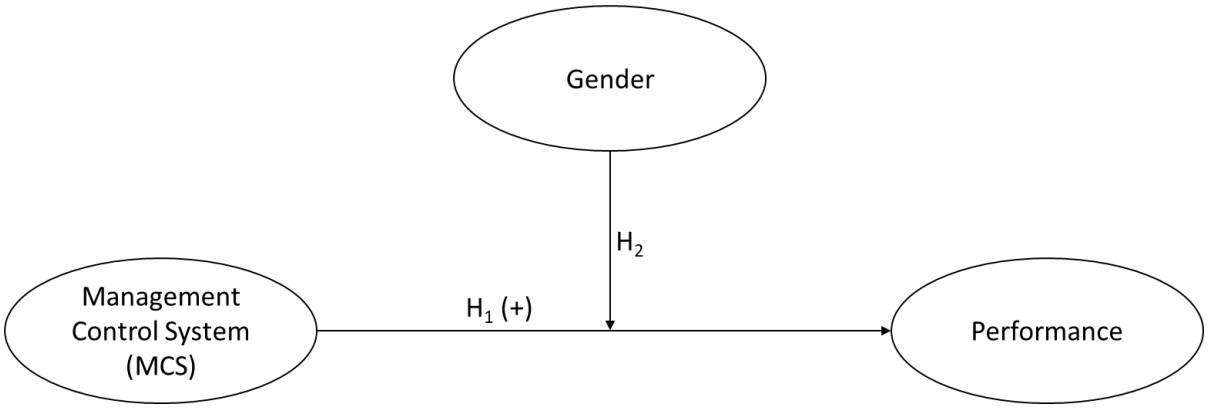


**Figure 1** Conceptual Framework

## Hypotheses Development

### The Influence of MCS (Input, Output, Behavioral Controls) on Study Programs Performance

MCS can enhance organizational performance in several ways. MCS translates high-level strategic objectives into specific, measurable targets and initiatives for different departments and individuals (Feder & Weißenberger, 2021). This ensures everyone understands what they need to achieve and how their work contributes to the bigger picture (Nelly, 2021). By linking resource allocation decisions (budgeting, personnel, facilities) to strategic priorities, MCS help organizations invest in areas that matter most for achieving their goals (Bukh & Svanholt, 2020). MCS also provides timely and accurate data on key performance indicators (KPIs), giving managers the insights they need to make informed decisions about operations, resource allocation, and strategy adjustments (Rehman et al., 2023). By tracking KPIs, MCS allows for regular performance evaluation against targets, enabling early detection of deviations and prompting corrective action before problems escalate (Hatane et al., 2020). In conclusion, a well-designed and implemented MCS can be a powerful tool for enhancing organizational performance by aligning actions with strategy, improving decision-making, motivating employees, and fostering a culture of learning and adaptation. Some studies Alkhafaji et al. (2018) and Henri (2006) have shown the positive impact of MCS on various measures of organizational performance. Based the above explanations, the hypothesis is formulated as follows:

**$H_1$:** *MCS (input, output, behavioural controls) positively influences study program performance.*

### The Role of Gender as Moderation Towards Influence of MCS on Study Program Performance

According to contingency theory gender can be put as a contextual factor in designing MCS in HEI that aims to enhance the performance of study programs (Yan, 2011). The literature suggests that MCS should be tailored to the specific organizational context to improve organizational performance (Alkhafaji et al., 2018). Studies have shown differences in how men and women respond to different types of motivation (Hatane et al., 2020). A highly competitive MCS focused on extrinsic rewards might not be as effective in motivating female faculty or students who prioritize intrinsic rewards like collaboration and social impact (Naz et al., 2020). It indicates that gender should be considered in designing MCS for HEIs (Yan, 2011). However, research on the role of gender in MCS and study program

performance is still limited. There is evidence that high organizational performance may result from a matching of an organization's environment, strategy, and internal structures and systems, including MCS (Alkhafaji et al., 2018). Thus, gender-sensitive MCS designed to align with the unique characteristics and priorities of HEIs could potentially enhance the performance of study programs. Based the above arguments, the hypothesis is formulated as follows:

**$H_2$:** *Gender moderates the influence of MCS on study program performance.*

## Methodology

This research is a scientific study based on positivism using a survey method. This research selected private HEIs in Indonesia as samples, with respondents as permanent lecturers. This is because, according to Sofyani et al. (2023), private HEIs has received less attention in study, especially in Indonesia. Meanwhile, most private HEIs experience poor performance and quality. Most private HEIs initiated the MCS policy following the Snell model, including input, output, and behavioural control. Respondents were determined based on a non-probability sampling, namely a purposive sampling method based on criteria, lecturers who already have National Lecturer Identity Number and permanent lecturer status. Lecturers who meet these criteria are subject to the MCS and PMS policies and must meet lecturer performance target indicators, including teaching, conducting research and publication, and doing community service (Shamsuddinova et al., 2024).

This study uses non-probability sampling, so according to the suggestion of Memon et al. (2020), a power analysis test is needed to determine the minimum sample size. Based on the results, the minimum sample size is 77 lecturers. Thus, the results of the questionnaire distribution obtained by 291 lecturers met the sample size (Table 1). Many survey studies in this domain report that questionnaire return rates are typically between 10% and 20% of the distributed questionnaires (Fowler Jr, 2013). Meanwhile, the response rate exceeds the specified sample size, reaching 58.2% of the total distributed. The present study shows distinctions in contrast to earlier investigations, exemplified by Soewarno et al. (2022), who reported an 18% variance with a cohort consisting of 182 lecturers, and Nazaruddin et al. (2020), who identified a disparity of 203 eligible respondents. Table 1 presents the demographics of respondents.

The variables measurements were adopted from previous studies and modified according to the research context. Measurement of MCS refers to Su et al. (2022), meanwhile performance refers to (Tahar et al., 2022). The development of the questionnaire was carried out by involving five experts from the field of managerial accounting backgrounds for consultation and validation (Lewis et al., 2005).

In developing the questionnaire used for this research, based on the suggestions of Blumberg et al. (2014), aspects (indicators) of the variables are elaborated to ensure that the instrument can capture the research objectives. All variables in the questionnaire are scaled using Likert 1 to 5, where 1 is strongly disagree and 5 is strongly agree. This range was used because it is often used in survey research conducted in Indonesia. The 5-point Likert scale was chosen because, according to (Hair Jr et al., 2021) and Revilla et al. (2014), the scale is more accessible for statistical analysis and interpretation. The development of the questionnaire has gone through several stages, such as determining variable measurement indicators, preparation for the questionnaire by adjusting the question sentences so that it is easy to understand, expert consultation and validations, pilot test, and finally, instrument quality assessments (Sofyani et al., 2023).

Before conducting the hypothesis test, a statistical test was performed based on the demographics of the respondents and the variables first. Hypothesis testing uses the variance-based Partial Least

Square-Structural Equation Modelling (PLS-SEM) method. PLS-SEM is suitable for testing the nonparametric Likert scale and has the possibility of significant multicollinearity (Hair et al., 2019; Sholihin & Ratmono, 2021). PLS-SEM was also chosen because it is suitable for testing minimal data and requires a relatively small sample size and hypothesis based on a weak theoretical foundation (Chin et al., 2003). Hair Jr et al. (2021) stated that PLS-SEM is more suitable than the covariance-based SEM method (CB-SEM) because predictions focus more on the influence of exogenous variables on endogenous variables than on the goodness of the model developed. To obtain robust results, this study considered several suggestions from some statistician scholars Hair et al. (2019), namely, in addition to validity and reliability tests, this study conducted confirmatory tetrad analysis (CTA), PLS prediction, and nonlinear tests. There is also suggestion to look at the possibility of method bias using standard method variance (Podsakoff et al., 2003).

**Table 1** Demographic of Respondents

| Description | Total | % |
|---|---|---|
| *Age* | | |
| 25-35 | 132 | 45 |
| 36-45 | 88 | 30 |
| 45-65 | 67 | 23 |
| No Answer | 4 | 1 |
| *Gender* | | |
| Female | 149 | 51 |
| Male | 142 | 49 |
| *Length of Employment* | | |
| 0 – 5 years | 92 | 32 |
| 6-10 years | 107 | 37 |
| 11-15 years | 41 | 14 |
| 16-29 years | 12 | 4 |
| No Answer | 39 | 13 |
| *Level of Education* | | |
| Master Degree | 230 | 79 |
| Doctoral Degree | 61 | 21 |
| *Lecturer Certification* | | |
| Certified | 72 | 25 |
| Not Certified Yet | 191 | 65 |
| No Answer | 28 | 10 |
| *Professional Certifications (include being an accountant, nurse, etc.)* | | |
| Certified | 144 | 49 |
| Not Certified Yet | 121 | 41 |
| No Answer | 26 | 9 |
| Total | 291 | 100 |

Source: Processed Data, 2024

## Results and Discussions

### Bias Test and Descriptive Statistics

Since survey research relies on self-reports, there is a possibility of normative bias called Common Method Variance (CMV). Therefore, a test for related bias was conducted using Harman's single factor test (Tehseen et al., 2017). According to Podsakoff et al. (2003) common method bias becomes a problem if one latent factor contributes more than 50% of the variance. The test results showed that

the highest latent factor only contributed 30.80% of the variance. Therefore, test bias is not a serious threat to the results of this study.

The results of the descriptive analysis are presented in Table 2 to show the respondents' perceptions of all the variables studied. It was found that respondents' perceptions of each variable tended to be moderate to high given the average value was in the range of 3-4 scale. The average input and behavioural control dimensions have a high response because the value shows an average of more than 4. Meanwhile, for output control, it is classified as moderate because it is less than 4. This indicates that the main focus of Indonesian higher education institutions in pursuing performance is on staffing practices, training, and supervision (input control) and the development of regulations that govern what lecturers should do. Meanwhile, setting clear KPIs supported by reward schemes is still lower than the other two control policies. The implementation of MCS in HEIs is still considered low, as indicated by the minimum value below 2.

**Table 2** Descriptive Statistic Result

| Information | Mean | Min | Max | SD |
|---|---|---|---|---|
| Organizational Performance | 3.89 | 1.00 | 5.00 | 0.71 |
| Input Control | 4.00 | 1.70 | 5.00 | 0.63 |
| Output Control | 3.87 | 1.00 | 5.00 | 0.65 |
| Behavior Control | 4.07 | 1.30 | 5.00 | 0.67 |

Source: Processed Data, 2024

## Validity Test

Before testing the hypothesis, it is important to ensure that the measurements used are valid by conducting construct validity testing (Hair et al., 2019). As a guideline in construct validity testing, the accepted value for loading and cross-loading is 0.5 (Hair et al., 2019). Validity is divided into convergent validity and discriminant validity. Convergent validity measures the extent to which several items agree to measure the same concept. Table 3 shows that the loading and average variance extracted (AVE) values are in accordance with general guidelines (Fornell & Larcker, 1981; Hair Jr et al., 2021).

**Table 3** Convergent Validity Test Results

| Code | Indicator | Outer Loading |
|---|---|---|
| *Organizational Performance (OP) – **AVE = 0.516*** | | |
| OP2 | In the last 2 years, more than 50% of students in the study program graduated on time | 0.727 |
| OP3 | In the last 2 years, more than 50% of the lecturers in my study program have carried out community service as a speaker and companions for community programs. | 0.642 |
| OP5 | In the last 2 years, the number of citations from lecturers at the Study Program, both books and articles, has exceeded the set target | 0.777 |
| OP6 | In the last 2 years, more than 50% of lecturers in study programs published the results of community service activities in journals/proceedings | 0.737 |
| OP7 | More than 50% of alumni who graduated in the last 2 years got jobs less than 6 months after they graduated | 0.739 |
| OP8 | In the last 2 years, student achievement in study programs (academic and non-academic) has exceeded the set targets | 0.680 |
| *Input Control (IC) – **AVE = 0.601*** | | |
| IC1 | Receive training at least once a semester to help achieve performance targets, such as training in writing books and publication manuscripts | 0.650 |

**Table 3** Convergent Validity Test Results (Cont.)

| Code | Indicator | Outer Loading |
|---|---|---|
| IC4 | HEI implements policies for managing lecturer career paths effectively | 0.799 |
| IC5 | HEI provides ample opportunities for all lecturers to improve their competencies by taking professional certifications, doing post-doctoral studies, etc. | 0.816 |
| IC6 | HEI carries out continuous development of lecturer skills such as teaching methods, research data analysis techniques, community service methods, etc | 0.825 |
| *Output Control (OC) – **AVE = 0.579*** | | |
| OC1 | Lecturer performance is assessed by universities objectively based on work results | 0.761 |
| OC2 | HEI set performance targets for its lecturers in its annual work plan In assessing performance | 0.856 |
| OC3 | HEI compares lecturers' performance achievements with predetermined targets | 0.827 |
| OC4 | HEI provides incentives for successfully achieving performance targets | 0.685 |
| OC5 | HEI determines punishment if lecturers are unable to achieve minimum performance targets | 0.656 |
| *Behavioural Control (BC) – **AVE = 0.616*** | | |
| BC1 | The lecturer performance appraisal policy appropriately recognizes the lecturer's contribution | 0.751 |
| BC2 | Lecturers fulfill their responsibility for the targeted performance (teaching, publications & research, and community service) | 0.743 |
| BC3 | HEI management evaluates the achievement of its lecturers' performance targets periodically | 0.826 |
| BC4 | HEI management provides feedback to lecturers to achieve performance targets | 0.778 |
| BC5 | HEI management provides support to lecturers to achieve performance targets | 0.820 |

Source: Processed Data, 2024

Next, discriminant validity testing is conducted to assess the extent to which items differentiate constructs or measure distinct concepts (Hair Jr et al., 2014). Based on suggestions from various literature, the Fornell-lacker criteria are used to see the discriminant validity value (Nazaruddin et al., 2024; Sofyani et al., 2023). The Fornell-Larcker criterion states that the square root of AVE for each construct should be greater than its correlations with other latent constructs (Fornell and Larcker, 1981). The results presented in Table 4 show that each correlation between the square root of AVE is higher than its correlation with other latent constructs, so the discriminant validity results were met.

**Table 4** Discriminant Validity Test Results (Fornell–Lacker)

| Construct | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| BC | **0.785** | | | |
| IC | 0.495 | **0.776** | | |
| OP | 0.637 | 0.315 | **0.718** | |
| OC | 0.780 | 0.466 | 0.594 | **0.761** |

Source: Processed Data, 2024

## Reliability test

In addition to validity, according to Hair et al. (2019), it is necessary to consider the reliability results to determine the extent to which the instrument used is stable and consistent so that it provides relatively the same results if repeated measurements are taken. Reliability can be seen from the Cronbach Alpha and Composite Reliability values, with the agreed rule of thumb being 0.60 (Hair et al., 2019). The results presented in Table 5 show that the value has met the specified minimum limit, so the results are reliable.

**Table 5** Reliability Test Results

| Construct | Cronbach's alpha | Composite reliability |
|---|---|---|
| BC | 0.844 | 0.846 |
| IC | 0.777 | 0.795 |
| OP | 0.812 | 0.822 |
| OC | 0.817 | 0.841 |

Source: Processed Data, 2024
Notes: BC = Behavioral Control; IC = Internal Control; OP = Organizational Performance; OC = Output Control.

## Permutation analysis

In PLS-SEM multigroup analysis, the primary goal is to examine whether there are significant differences in path relationships between different groups (e.g., groups by gender, age, or location). Permutation tests were used to evaluate the significance of these path differences in a way that did not rely on the assumption of a normal distribution. Additionally, before conducting a multigroup analysis, it is essential to ensure that the measurement model (the way constructs are measured) is comparable across groups. This ensures that any observed differences in path coefficients are not due to differences in how constructs are measured but rather due to true differences in relationships between constructs. The condition for conducting a multigroup test is the fulfilment of Measurement Invariance Assessment (MICOM) using permutation analysis. Henseler et al. (2016) suggested that if the results of MICOM's Steps 1 and 2 (but not Step 3) indicate that there is no lack of measurement invariance, partial measurement invariance has been established. This result allows comparing the standardized path coefficients across the groups by conducting a multigroup analysis. Hence, researchers are recommended to interrupt the MICOM procedure and conduct a multigroup analysis. Based on the MICOM analysis results as shown in Table 6, it was found that Step 1 (Configural Invariance) shows that the measurement model fits across all groups, so configural invariance is considered to be achieved. Similarly, in Step 2 (Compositional Invariance), it was found that composite scores are consistent across groups, so compositional invariance is considered to be achieved. These results conclude that the multi group test can be continued.

**Table 6** MICOM Step 2 Results

| Construct | Original correlation | Correlation permutation mean | 5.0% | Permutation p value |
|---|---|---|---|---|
| BC | 0.997 | 0.997 | 0.994 | 0.386 |
| IC | 0.999 | 0.985 | 0.953 | 0.962 |
| OC | 0.996 | 0.996 | 0.989 | 0.353 |
| OP | 0.997 | 0.996 | 0.990 | 0.618 |

Source: Processed Data, 2024
Notes: BC = Behavioral Control; IC = Internal Control; OP = Organizational Performance; OC = Output Control.

Moreover, this research uses the variance inflation factor (VIF) to determine the existence of multicollinearity between constructs in the inner model test results. Before assessing structural relationships, collinearity should be checked to ensure that collinearity does not bias the regression

results. Hair et al. (2019) collinearity can occur when the VIF value exceeds 3. As a result, the VIF value must be three or less than 3. Table 7 shows the VIF range is less than 3 so that multicollinearity does not occur, and the constructs are independent.

Hypothesis test results are presented in Table 7. It is found that the impact of MCS dimensions on study program performance, moderated by gender. For male faculty members, only behavioral control enhances performance. This implies that the performance of the program is determined by how well it can control the behaviour of male faculty to achieve performance goals. In contrast, for female faculty members, both behavioural control and output dimensions are influential. Furthermore, the Adjusted $R^2$ of the research model shows the ability of exogenous variables to explain endogenous variables by 42.5%, which is considered a moderate prediction (Chin, 1998). In addition, For the approximate fit indices such as standardized root mean square residual (SRMR) and this criteria's values with a certain threshold (e.g., SRMR< 0.08) (Henseler et al., 2015).

**Table 7** Hypothesis Test (Structural Model Assessment Results)

| | | Complate: Organizational Performance | Female: Organizational Performance | Male: Organizational Performance |
|---|---|---|---|---|
| | | Path Coefficient | | |
| BC | H1 | 0.460* | 0.353* | 0.548* |
| IC | H2 | -0.031 | -0.089 | 0.072 |
| OC | H3 | 0.247* | 0.397* | 0.070 |
| R Square Adjusted | | 0.425 | | |
| VIF Ranges | | 1.351-2.253 | 1.435-2.873 | 1.232-2.326 |
| SRMR | | 0.075 | 0.088 | 0.082 |

Source: Processed Data, 2024

Notes: Notes: BC = Behavioral Control; IC = Internal Control; OP = Organizational Performance; OC = Output Control; *Significant at 5% levels.

## Robustness test

Another way to assess the predictive accuracy of the PLS path model is to calculate the $Q^2$ value (Hair et al., 2019). As a guideline, the $Q^2$ value should be more excellent than zero for a particular endogenous construct to indicate the predictive accuracy of the structural model for that construct. As a rule of thumb, $Q^2$ values higher than 0.25 and 0.50 illustrate the PLS path model's small, medium and large predictive relevance. Thus, the results indicate the majority of minor predictive relevance. Prediction testing is used to determine the model's predictive power (Hair et al., 2019). A model is said to have a high level of prediction if the PLS-SEM RMSE and MAE indicator values are lower than the linear regression model (LM). The results in Table 8 show that a minority (or the same number) of indicators in the PLS-SEM analysis produce higher prediction errors than the naïve LM benchmark, indicating moderate predictive power.

**Table 8** PLS Predict Test Results

| Construct | $Q^2$predict | PLS-SEM_RMSE | PLS-SEM_MAE | LM_RMSE | LM_MAE |
|---|---|---|---|---|---|
| OP2 | 0.224 | **0.884*** | 0.682 | 0.879 | 0.685 |
| OP3 | 0.140 | **0.962*** | 0.689 | 0.962 | 0.699 |
| OP5 | 0.277 | 0.907 | 0.733 | 0.933 | 0.748 |
| OP6 | 0.254 | 0.895 | **0.699*** | 0.908 | 0.694 |
| OP7 | 0.179 | **0.837*** | 0.659 | 0.833 | 0.667 |
| OP8 | 0.163 | 0.907 | 0.712 | 0.925 | 0.726 |

Source: Processed Data, 2024

Furthermore, Sarstedt et al. (2020) also provide recommendations to consider nonlinear effects and endogeneity related to structural models. The nonlinear test was carried out using the quadratic analysis method. The results show that all exogenous variables have p-values that are not significant. The linearity assumption is met if the p-value exceeds 0.05 (Hair et al., 2019). Based on Table 9, the relationship between exogenous and endogenous variables is linear, and the model can be considered strong (Hair et al., 2019).

**Table 9** Non-Linear Test Results

| Construct | Coefficient | SD | T statistics | p-values |
|---|---|---|---|---|
| QE (IC) → OP | 0.001 | 0.036 | 0.024 | 0.981 |
| QE (OC) → OP | -0.036 | 0.046 | 0.784 | 0.433 |
| QE (BC) → OP | -0.074 | 0.045 | 1.668 | 0.095 |

Source: Processed Data, 2024

## Discussion

This study reveals a key finding that gender significantly moderates the relationship between MCS dimensions and study program performance within HEIs. Specifically, male faculty members thrive under behavioural control, with their performance directly linked to how effectively their behaviour aligns with program objectives. This suggests a work environment where clear expectations, well-defined rewards, and potentially, a task-oriented leadership approach contribute to optimal performance for this group. However, the study also demonstrates that female faculty members respond to both behavioural control and output dimensions, indicating a more nuanced dynamic. This difference warrants further exploration to understand the underlying reasons for this variation. Ferer (2012) suggests that there are differences in work motivation and leadership styles between genders. This could offer a potential explanation for the observed differences in our study. It is plausible that female faculty members are more receptive to collaborative environments and value a participative leadership style, which might explain the significance of output dimensions in their performance.

Furthermore, the study results confirm that the implementation of MCS in HEIs is influenced by various contingent factors Kenno et al. (2020), but from this study findings, gender plays the role. The study findings extend the previous research that MCS have a significant impact on the performance of higher education institutions, but the effectiveness is moderated by the governance mechanisms in place (Muktiyanto et al., 2020). This study addresses suggestions by Thornton (1995) who highlights the importance of evaluating efficiency and effectiveness in the context of the specific institution. They argue that it is crucial to examine whether any implicit biases or stereotypes influence how male and female faculty members perceive and react to different MCS dimensions.

## Practical and Theoretical Implications: A Contingency Theory Perspective

This study's findings offer significant practical implications for HEIs administrators, particularly when viewed through the lens of contingency theory. Contingency theory posits that there is no single "best" way to manage; rather, the most effective management approach depends on the specific circumstances or contingencies at play (Olden, 2016). In this case, gender emerges as a crucial contingency factor influencing the effectiveness of different MCS dimensions. Therefore, a "one-size-fits-all" approach to MCS implementation is unlikely to be effective. Instead, HEIs should strive to develop more nuanced and tailored strategies that consider the differential impacts of MCS dimensions on male and female faculty members (Jacob et al., 2018).

Some practical implications based on a contingency theory perspective are detailed further as follows: 1) HEIs should strive to balance behavioural control and output control mechanisms. While setting clear expectations and rewards (behavioural control) benefits all faculty, integrating output-oriented

measures that highlight collaboration and results may be especially motivating for female faculty; 2) Leadership development programs should focus on the importance of flexibility and adaptability in management styles. Such training can help department heads and program directors acquire the skills needed to address the diverse needs and work preferences of faculty, thereby creating a more inclusive and motivating work environment; 3) Clearly communicate the reasons and objectives behind the selected MCS to faculty members. Transparency can help mitigate concerns about potential bias or unfair treatment, thereby fostering trust and acceptance among both male and female faculty; and 4) Continuously assess the effectiveness of the MCS, with particular attention to any unintended gender-based differences in performance or job satisfaction. The principles of the contingency theory of management accounting—emphasizing continuous evaluation and adaptation—are applicable to MCS in higher education as well (Granlund and Lukka, 2017). Be prepared to modify the MCS approach based on evaluation results to ensure it remains equitable and effective for all faculty members (Pomare and Berry, 2016).

## Conclusions

This research investigates the impact of MCS with three dimensions: input, output, and behavioural, on the performance of study programmes in private HEIs. This study also investigates whether gender plays a moderating role in MCS-performance relationships. The results of SEM-PLS analysis revealed that output and behavioural controls had a positive effect on performance, but input controls did not. Moderation testing using a split sampling approach uncovered that in the male group, only behavioural control had a positive effect on performance. In contrast, in the female group, behaviour and output control have an impact on performance. From this insight, gender moderates the relationship between output control and performance, implying that output control should be prioritised more in females.

This study acknowledges several limitations, so readers should proceed with caution when drawing conclusions based on its findings. Firstly, this study only included private HEIs and undergraduate programmes, while public HEIs and diploma and postgraduate levels were excluded. Thus, future research is required because the two items mentioned above may have distinct cultures or characteristics. Secondly, it was limited to HEIs in two provinces on Indonesia's Java Island. As a result, the study's findings cannot be applied broadly. As a result, we propose conducting similar studies in multiple geographical regions or countries. Thirdly, this study only examines the perceptions of permanent lecturers (respondents) and does not consider the perspectives of study programme management or other management level within HEIs. As a result, additional research is required to address this limitation.

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