

Leveraging Marketing Intelligence to Enhance University Performance

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Abstract: *This study aims to examine the impact of marketing intelligence on university performance, with a focus on the mediating roles of knowledge utilization effectiveness and strategic decision quality. Employing a quantitative research design, data were collected from academic and administrative staff at the Akademi Penerbang Indonesia Banyuwangi and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings reveal that marketing intelligence has a significant influence on both knowledge utilization and strategic decision quality, which in turn positively affect university performance. While direct effects from market sensing capability and marketing analytics capability on performance were not significant, their indirect effects through marketing intelligence were substantial. Competitor intelligence was found to be a strong predictor of marketing intelligence. These results underscore the pivotal role of marketing intelligence as a strategic capability, enabling universities to transform external insights into informed decisions and enhanced institutional outcomes. The study contributes to the higher education management literature by offering a comprehensive model that links marketing functions to academic performance through strategic mechanisms.*

Introduction

The growing complexity of global education demands has compelled universities to enhance their performance across multiple dimensions, including academic reputation, stakeholder satisfaction, and operational efficiency. In this context, the strategic application of marketing intelligence has emerged as a pivotal tool for institutional sustainability and competitiveness (Gajić et al., 2024). Marketing intelligence—encompassing the systematic collection, analysis, and dissemination of information relevant to market trends, competitor behavior, and customer preferences—plays a crucial role in driving informed decision-making processes in higher education institutions (Whelan et al., 2022). As higher education becomes

increasingly market-oriented, the integration of data-driven marketing practices aligns with the strategic objectives of modern universities seeking to adapt to digital transformation and competitive pressures (Stanley Coffie., 2018; Leonidou et al., 2023).

Despite the relevance of marketing intelligence in business sectors, its application within the higher education context remains underexplored, particularly to performance outcomes. Existing literature indicates that marketing capabilities, such as market sensing and competitor intelligence, contribute to organizational agility and responsiveness (Day 1994; Narula et al., 2023). Furthermore, analytics-driven decision-making enables institutions to gain insights into student behavior and satisfaction, which are vital for refining recruitment, engagement, and retention strategies (Gaftandzhieva et al., 2023). However, the link between marketing intelligence dimensions and institutional performance in universities, mediated by knowledge utilization and decision quality, has yet to be sufficiently empirically validated (Srivastava et al., 2023).

The evaluation of university performance is multifaceted, often encompassing teaching quality, research output, community engagement, and administrative efficiency (Anthony et al., 2022). While various internal and external factors influence these dimensions, strategic decision-making supported by marketing intelligence is increasingly acknowledged as a determinant of institutional success (Richards et al., 2014). Notably, the dynamic capability theory asserts that organizations must reconfigure internal competencies in response to rapidly changing environments, which includes leveraging marketing intelligence to enhance decision-making processes (Teece, 2018; Barreto, 2019). Thus, exploring how marketing intelligence enables universities to achieve superior performance offers theoretical and practical insights into higher education management.

The deployment of marketing intelligence in higher education typically involves three key components: market sensing capability, competitor intelligence, and marketing analytics (Davies et al., 2010). Each of these components fosters strategic decision-making by providing timely and accurate information about external and internal environments (Slater et al., 2019). For example, market sensing enables universities to anticipate trends in student preferences and labor market requirements, while competitor intelligence informs institutional positioning and differentiation strategies (Verhoef & Bijmolt, 2021). Additionally, the use of marketing analytics has been shown to enhance the quality of strategic decisions, promoting alignment between institutional goals and market demands (Davenport Thomas, 2006; Fonti et al., 2022).

Moreover, intervening mechanisms such as knowledge utilization effectiveness and strategic decision quality are crucial in understanding how marketing intelligence translates into improved performance (Alhawamdeh et al., 2019). Effective knowledge utilization ensures that collected intelligence is embedded in planning and execution, while decision quality determines the extent to which strategic choices lead to positive institutional outcomes (Wu et al., 2022). According to organizational learning theory, institutions that actively process and apply information are more likely to exhibit adaptive and innovative behaviors, which in turn drive performance (Spender, 2008; Hussinki et al., 2015).

Given these conceptual linkages, this study aims to evaluate the influence of marketing intelligence on university performance, incorporating both direct and indirect effects. Specifically, the study identifies three independent variables—market sensing capability, competitor intelligence, and marketing analytics capability—as key dimensions of marketing intelligence. These variables are hypothesized to influence university performance either directly or indirectly through two intervening variables: knowledge utilization and strategic decision quality. The dependent variable, university performance, is measured in terms of its academic, administrative, and reputational outcomes. This conceptual framework aligns with prior studies on strategic marketing in higher education, yet introduces a novel empirical model that integrates multiple dimensions of intelligence and performance.

In response to the research gap, this paper adopts a quantitative approach to assess the structural relationships among the variables using Partial Least Squares Structural Equation Modeling (PLS-SEM). By collecting survey data from decision-makers within higher education institutions, the study seeks to provide empirical validation for the proposed framework. The research findings are expected to contribute to the literature on marketing intelligence by highlighting its strategic value in the context of university performance enhancement, while offering practical guidance for institutional leaders in formulating evidence-based marketing strategies. Additionally, the selection of the Akademi Penerbang Indonesia Banyuwangi as a case study adds contextual richness to the research, as this institution represents a specialized and government-affiliated higher education provider with distinct strategic and operational challenges. Its focus on aviation education and its relatively small but dynamic organizational structure provide a unique setting for examining the applicability and effectiveness of marketing intelligence in decision-making and performance outcomes. While the context is specific, the findings are relevant for other higher education institutions facing similar resource constraints, regulatory dynamics, and market positioning demands. This supports the generalizability of the model to comparable institutional environments.

The following is the conceptual framework in this research:

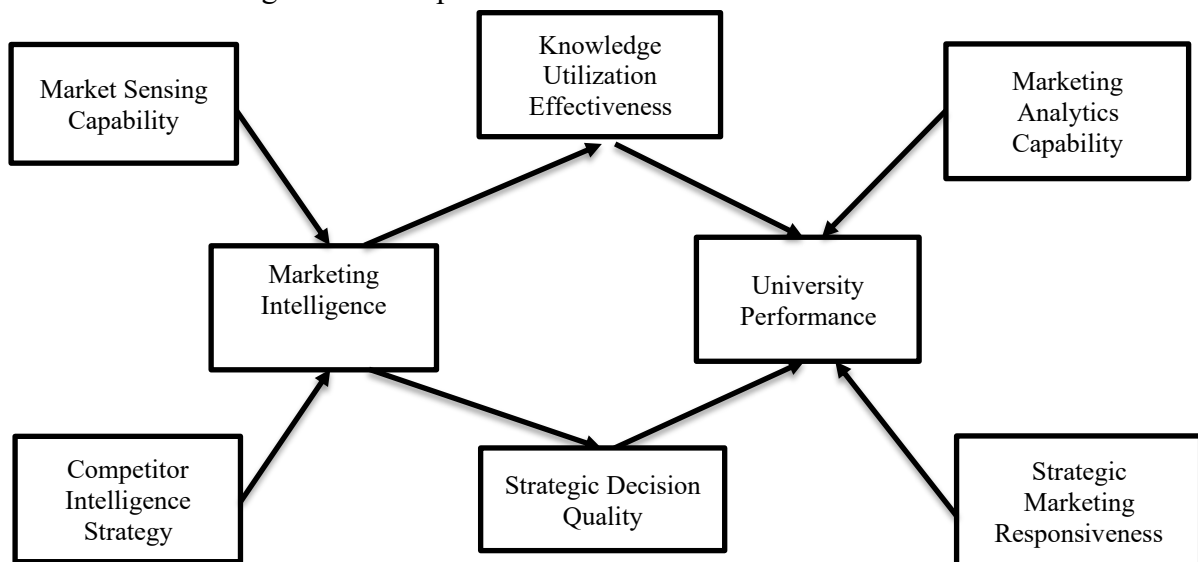


Figure 1. Framework

Research Methods

The research employed a quantitative design to examine the structural relationships among marketing intelligence components and university performance, using SmartPLS 4.0 for data analysis. This methodological approach aligns with the study's aim to test a complex model involving multiple latent variables and mediating effects. Structural Equation Modeling based on Partial Least Squares (PLS-SEM) is considered suitable for exploratory research, particularly when the goal is theory development and the model includes hierarchical constructs and indirect effects (Hair et al., 2021). The target population consisted of academic and administrative staff involved in strategic decision-making at the Akademi Penerbang Indonesia Banyuwangi. A purposive sampling technique was adopted to ensure that respondents possessed adequate knowledge of institutional marketing practices and strategic performance metrics. The data were collected using a structured questionnaire with measurement items adapted from validated sources, rated on a five-point Likert scale ranging from "strongly disagree" to "strongly agree." To ensure measurement reliability, all questionnaire items were adapted from previously validated studies and underwent expert review for content validity. A pilot test involving 15 academic and administrative respondents was also conducted to assess instrument clarity and consistency before complete data collection.

To ensure the reliability and validity of the constructs, the measurement model was evaluated through internal consistency reliability (composite reliability), convergent validity (average variance extracted), and discriminant validity (Fornell-Larcker criterion and HTMT ratio), following the guidelines of Hair et al. (2019). The structural model was then assessed by analyzing the significance of path coefficients, R-squared values, and effect sizes (f^2), as well as evaluating the predictive relevance (Q^2) of the model using blindfolding procedures. Bootstrapping with 5,000 resamples was performed to test the statistical significance of the hypothesized relationships. This rigorous analytic approach enhances the robustness of the findings. It contributes to a nuanced understanding of how marketing intelligence drives institutional performance through the utilization of knowledge and strategic decision-making processes in a higher education context.

Result and Discussion

This chapter presents the empirical results derived from the analysis of data collected from respondents at Akademi Penerbang Indonesia, Banyuwangi. The findings are structured to evaluate the validity and reliability of the measurement model, followed by the assessment of the structural model to test the proposed hypotheses. By employing Partial Least Squares Structural Equation Modeling (PLS-SEM), the study examines the direct and indirect relationships among the variables, including the mediating effects of knowledge utilization effectiveness and strategic decision quality. This analysis provides a comprehensive understanding of how marketing intelligence influences university performance, offering valuable insights into the dynamics of strategic marketing practices in the higher education sector.

The outer loading analysis, as shown in the measurement model results, indicates that all indicators demonstrate satisfactory levels of loading on their respective latent constructs, surpassing the commonly accepted threshold of 0.70 (Hair et al., 2019). Specifically, indicators for Competitor Intelligence (CI1–CI3) display high outer loading values ranging from 0.845 to 0.899, suggesting strong convergent validity. The construct Knowledge Utilization Effectiveness (KUE1–KUE3) also exhibits robust loadings, with values ranging from 0.807 to 0.890, confirming that each indicator makes a meaningful contribution to the measurement of the latent variable. For Market Sensing Capability (MSC1–MSC3), the loadings range from 0.790 to 0.910, further affirming the validity of the construct. Marketing Analytics Capability (MAC1–MAC3) shows acceptable loading values (0.748–0.846), supporting the reliability of the measurement. Similarly, the three indicators for Marketing Intelligence (MI1–MI3) exhibit high loadings from 0.823 to 0.909, confirming construct unidimensionality. Additionally, Strategic Decision Quality (SDQ1–SDQ3) has outer loading values from 0.766 to 0.882, while Strategic Marketing Responsiveness (SMR1–SMR3) demonstrates very strong values (0.857–0.923). Lastly, University Performance (UP1–UP3) indicators also report high loadings (0.814–0.918), suggesting excellent indicator reliability. These results confirm that all indicators are valid measures of their respective constructs, thereby contributing to the robustness of the reflective measurement model in the study.

Table 1. Construct Reliability and Validity

| Construct | Cronbach's Alpha | rho_A | Composite Reliability | AVE |
|-------------------------------------|------------------|-------|-----------------------|-------|
| Competitor Intelligence | 0.852 | 0.870 | 0.909 | 0.769 |
| Knowledge Utilization Effectiveness | 0.828 | 0.847 | 0.896 | 0.743 |
| Market Sensing Capability | 0.811 | 0.819 | 0.888 | 0.727 |
| Marketing Analytics Capability | 0.742 | 0.749 | 0.853 | 0.661 |
| Marketing Intelligence | 0.834 | 0.846 | 0.900 | 0.750 |
| Strategic Decision Quality | 0.762 | 0.777 | 0.863 | 0.678 |
| Strategic Marketing Responsiveness | 0.872 | 0.883 | 0.921 | 0.796 |
| University Performance | 0.816 | 0.839 | 0.891 | 0.732 |

Source: Research result

All constructs demonstrated satisfactory reliability and validity, as indicated by established thresholds in structural equation modeling. Cronbach's Alpha values for all constructs exceeded 0.70, indicating strong internal consistency (Hair et al., 2019). Similarly, the composite reliability (CR) scores ranged from 0.853 to 0.921, confirming that the measurement items are highly reliable in reflecting their respective latent variables. The rho_A values, which offer a more accurate estimation of construct reliability, also supported this consistency across all constructs. Furthermore, all Average Variance Extracted (AVE) values were above the minimum recommended threshold of 0.50, ranging from 0.661 to 0.796. This confirms good convergent validity, meaning each construct explains more than 50% of the variance in its indicators. These results affirm the robustness of the measurement model and validate the use of these constructs for subsequent structural path analysis.

Table 2. Discriminant Validity – Fornell-Larcker Criterion

| Construct | CI | KUE | MSC | MAC | MI | SDQ | SMR | UP |
|---|-------|-------|-------|-------|-------|-------|-------|-------|
| Competitor Intelligence (CI) | 0.877 | | | | | | | |
| Knowledge Utilization Effectiveness (KUE) | 0.773 | 0.862 | | | | | | |
| Market Sensing Capability (MSC) | 0.752 | 0.734 | 0.852 | | | | | |
| Marketing Analytics Capability (MAC) | 0.729 | 0.747 | 0.675 | 0.813 | | | | |
| Marketing Intelligence (MI) | 0.744 | 0.787 | 0.669 | 0.713 | 0.866 | | | |
| Strategic Decision Quality (SDQ) | 0.786 | 0.756 | 0.785 | 0.665 | 0.712 | 0.823 | | |
| Strategic Marketing Responsiveness (SMR) | 0.582 | 0.646 | 0.752 | 0.625 | 0.605 | 0.683 | 0.892 | |
| University Performance (UP) | 0.771 | 0.721 | 0.716 | 0.676 | 0.689 | 0.828 | 0.562 | 0.855 |

Source: Research result

The Fornell-Larcker discriminant validity test confirms that all constructs in the model satisfy the required criteria for discriminant validity. As per Fornell and Larcker (1981), the square root of the Average Variance Extracted (AVE) for each construct should be greater than its highest correlation with any other construct. This condition is met across all constructs, as evidenced by the bolded diagonal values in the table, which are consistently higher than the inter-construct correlations. For example, the square root of AVE for Competitor Intelligence is 0.877, which exceeds its correlations with all other constructs, such as 0.773 with Knowledge Utilization Effectiveness and 0.744 with Marketing Intelligence. Similarly, University Performance has an AVE square root of 0.855, higher than its correlations with all related constructs, including 0.828 with Strategic Decision Quality. These results demonstrate that each construct is empirically distinct and captures phenomena not represented by other constructs in the model, thereby affirming the discriminant validity of the measurement model.

Table 3. Hypothesis Testing Results

| Hypothesis Pathway | Coefficient | Mean | Std. Dev | T-Statistic | P-Value |
|--|-------------|-------|----------|-------------|---------|
| Competitor Intelligence → Marketing Intelligence | 0.554 | 0.552 | 0.148 | 3.731 | 0.000 |
| Knowledge Utilization Effectiveness → University Performance | 0.140 | 0.166 | 0.176 | 0.795 | 0.427 |
| Market Sensing Capability → Marketing Intelligence | 0.253 | 0.275 | 0.178 | 1.419 | 0.156 |
| Marketing Analytics Capability → University Performance | 0.196 | 0.151 | 0.226 | 0.870 | 0.384 |
| Marketing Intelligence → Knowledge Utilization Effectiveness | 0.787 | 0.795 | 0.070 | 11.221 | 0.000 |
| Marketing Intelligence → Strategic Decision Quality | 0.712 | 0.723 | 0.075 | 9.518 | 0.000 |
| Strategic Decision Quality → University Performance | 0.662 | 0.663 | 0.143 | 4.647 | 0.000 |
| Strategic Marketing Responsiveness → University Performance | -0.104 | - | 0.189 | 0.549 | 0.583 |
| MI → KUE → UP (Indirect Effect) | 0.436 | 0.437 | 0.116 | 3.770 | 0.000 |
| MI → SDQ → UP (Indirect Effect) | 0.395 | 0.396 | 0.105 | 3.755 | 0.000 |
| MSC → MI → KUE → UP (Serial Mediation) | 0.261 | 0.260 | 0.081 | 3.209 | 0.001 |
| CI → MI → SDQ → UP (Serial Mediation) | 0.472 | 0.481 | 0.123 | 3.828 | 0.000 |

Source: Research result

The hypothesis testing results indicate that several key pathways in the structural model are statistically significant, confirming the theoretical relationships proposed. Direct effects, such as Competitor Intelligence → Marketing Intelligence ($\beta = 0.554$, $p < 0.001$), Marketing Intelligence → Knowledge Utilization Effectiveness ($\beta = 0.787$, $p < 0.001$), and Marketing

Intelligence \rightarrow Strategic Decision Quality ($\beta = 0.712$, $p < 0.001$), demonstrate strong positive impacts with high t-values. Likewise, Strategic Decision Quality significantly predicts University Performance ($\beta = 0.662$, $p < 0.001$), suggesting that decision-making quality is a crucial determinant of institutional outcomes. In contrast, direct effects such as Market Sensing Capability \rightarrow Marketing Intelligence, Marketing Analytics Capability \rightarrow University Performance, and Strategic Marketing Responsiveness \rightarrow University Performance were not statistically significant, indicating the need for further investigation. Notably, the mediating effects were robust, particularly the serial mediation pathways such as CI \rightarrow MI \rightarrow SDQ \rightarrow UP and MSC \rightarrow MI \rightarrow KUE \rightarrow UP, both of which were significant at $p < 0.01$. These findings underscore the importance of marketing intelligence as a central mechanism through which upstream capabilities influence downstream university performance outcomes.

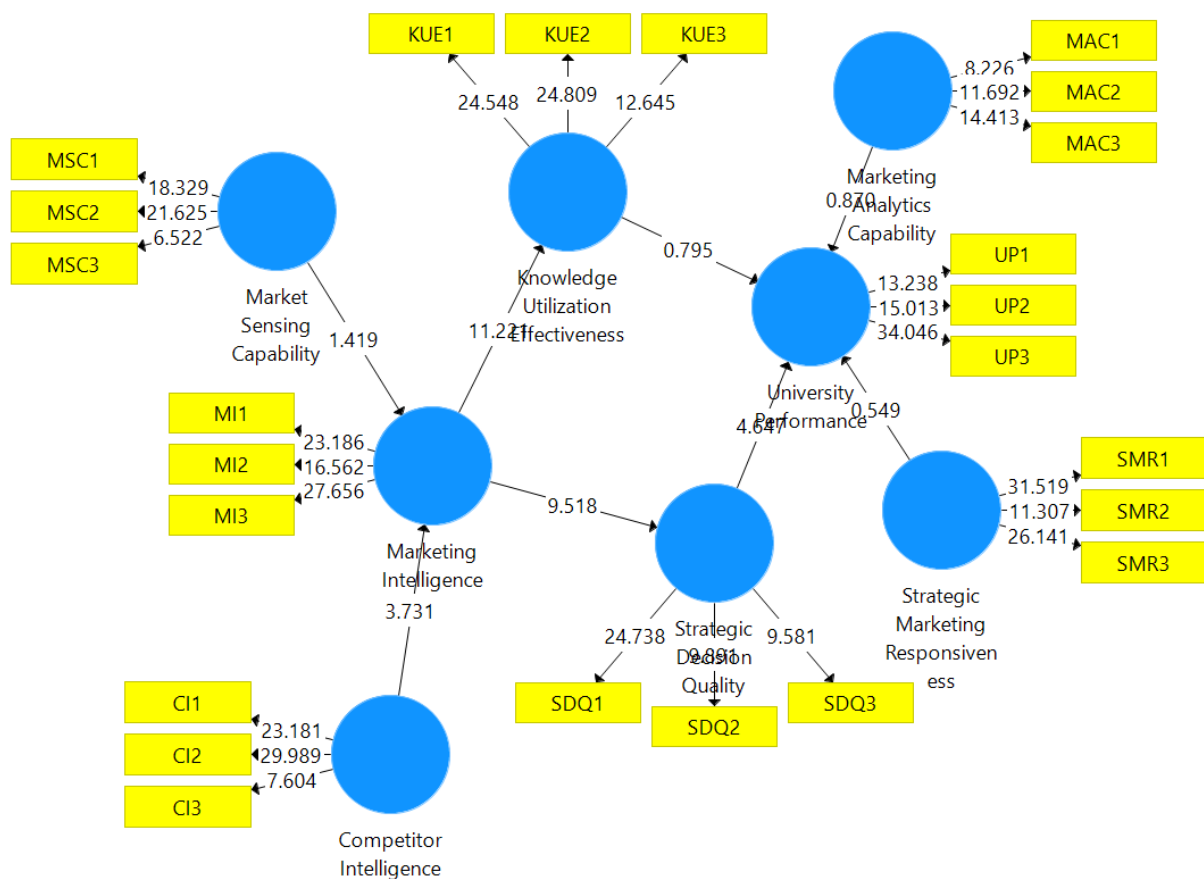


Figure 2. Bootstrapping Result

The empirical findings of this study offer valuable insights into the complex relationships between marketing intelligence components and university performance, particularly within the context of Akademi Penerbangan Indonesia Banyuwangi. The analysis underscores the pivotal role of marketing intelligence as a central construct that mediates the influence of various antecedent factors on institutional outcomes.

The significant positive relationship between competitor intelligence and marketing intelligence highlights the importance of systematically gathering and analyzing information about rival institutions. This finding aligns with previous research, which emphasizes that

competitive intelligence enables organizations to anticipate market trends and adjust their strategies accordingly (Palwishah, 2014). In the higher education sector, understanding competitors' offerings, strengths, and weaknesses allows universities to differentiate themselves and enhance their market positioning.

The study also reveals a strong positive association between marketing intelligence and both knowledge utilization effectiveness and the quality of strategic decisions. This suggests that the effective collection and interpretation of market-related information facilitates better internal knowledge application and more informed strategic choices. These results corroborate the assertions of George and Desmidt (2018), who argue that high-quality strategic decisions are contingent upon the availability and use of relevant information. In the context of higher education, this implies that institutions that invest in robust marketing intelligence systems are better equipped to make strategic decisions that align with market demands and institutional goals.

Furthermore, the positive impact of strategic decision quality on university performance underscores the critical role of informed decision-making in achieving institutional success. This finding is consistent with the work of Ahmed and Ahmed (2017), who emphasize that strategic decisions grounded in accurate and timely information contribute to improved organizational performance. In the case of the Akademi Penerbang Indonesia Banyuwangi, this suggests that enhancing the quality of strategic decisions through practical marketing intelligence can lead to better educational outcomes and increased competitiveness.

Interestingly, the study finds that neither market sensing capability nor marketing analytics capability has a direct, significant effect on university performance. However, their influence is realized indirectly through marketing intelligence and its subsequent impact on knowledge utilization and strategic decision-making. This suggests that while the ability to detect market changes and analyze marketing data is crucial, these capabilities must be integrated into a broader marketing intelligence framework to have a significant impact on institutional performance. This observation aligns with the perspective that market sensing and analytics serve as inputs into the marketing intelligence process, which then informs strategic actions (Fonti et al., 2022).

The lack of a significant direct relationship between strategic marketing responsiveness and university performance suggests that merely reacting to market changes is insufficient for achieving superior outcomes. Instead, proactive and informed strategies, underpinned by comprehensive marketing intelligence, are necessary to drive performance improvements. This finding aligns with the conclusions of Narula et al. (2023), who argue that strategic responsiveness must be coupled with a deep understanding of the market to be effective.

The study's mediation analysis further elucidates the pathways through which marketing intelligence influences university performance. Specifically, the indirect effects of marketing intelligence on performance, mediated by knowledge utilization effectiveness and strategic decision quality, are significant. This highlights the crucial role of marketing intelligence as a foundational element that enables institutions to leverage internal knowledge and make

informed, strategic decisions that enhance performance. These findings align with the theoretical framework proposed by Day (1994), which posits that market-driven organizations achieve superior performance by effectively sensing and responding to market dynamics.

The analysis also revealed that several variables, including Market Sensing Capability, Marketing Analytics Capability, and Strategic Marketing Responsiveness, did not have a statistically significant direct impact on university performance. This is attributed to contextual limitations within the sample institutions, where data-driven culture and responsiveness mechanisms are still in development. These results suggest the need for further exploration, perhaps with a comparative or longitudinal design, to understand better when and how these capabilities translate into performance outcomes.

Conclusion and Recommendation

This study concludes that marketing intelligence serves as a critical mediating construct, significantly enhancing university performance by facilitating effective knowledge utilization and high-quality strategic decision-making. While direct effects from market sensing capability and marketing analytics capability on performance were not statistically significant, their influence becomes impactful when channeled through marketing intelligence. Competitor intelligence emerges as a strong antecedent of marketing intelligence, reinforcing the importance of understanding external competitive environments. Moreover, the findings emphasize that strategic responsiveness alone is insufficient without the integration of informed intelligence and internal capability development. Overall, the results underscore the necessity for higher education institutions to institutionalize marketing intelligence frameworks to strengthen strategic functions and sustain competitive advantage in an evolving educational landscape.

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