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Strategic Role of Lecturer Innovativeness in Improving Academic Performance in Maritime Higher Education Institutions

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Abstract: This study examines the strategic role of lecturer innovativeness in improving academic performance in maritime higher education institutions. The research analyzes the influence of information technology utilization, knowledge management, and job satisfaction on lecturer innovativeness and lecturer performance. The study applies Innovation Theory, Knowledge-Based View Theory, and Job Satisfaction Theory as the theoretical foundation. A quantitative explanatory method was employed using Structural Equation Modeling (SEM). Data were collected from 203 permanent lecturers at maritime higher education institutions under the Ministry of Transportation in Java Island, Indonesia. The findings indicate that information technology utilization, knowledge management, and job satisfaction positively and significantly influence lecturer innovativeness. Lecturer innovativeness also has a significant effect on lecturer performance, particularly in teaching, research, publication, and community service activities. Furthermore, lecturer innovativeness acts as a mediating variable between the antecedent variables and lecturer performance. This study contributes to the higher education management literature by emphasizing lecturer innovativeness as a strategic factor in improving academic performance and institutional competitiveness.

Keywords: Lecturer Innovativeness, Academic Performance, Information Technology Utilization, Knowledge Management, Job Satisfaction.

INTRODUCTION

Higher education institutions have a strategic role in strengthening human capital, innovation capability, and institutional competitiveness in the digital era (Teece, 2018; Secundo et al., 2021). According to Dynamic Capability Theory, organizations must continuously develop adaptive capabilities, technological competence, and innovation capacity to survive in rapidly changing environments (Teece, 2018). In higher education, lecturers represent strategic intellectual assets because academic quality and institutional sustainability depend heavily on lecturer performance and innovativeness (Elrehail et al., 2018).

Academic performance has become a critical issue in higher education management because university competitiveness is strongly associated with teaching quality, scientific

productivity, research commercialization, and community engagement (Alam & Parvin, 2021). Recent studies argued that lecturer performance reflects the effectiveness of knowledge transfer, research contribution, digital teaching capability, and academic collaboration within educational institutions (Nikolopoulou et al., 2021). Furthermore, Resource-Based View Theory explains that organizational performance is influenced by unique internal resources, particularly human resources with innovative competencies and technological adaptability (Barney, 1991; Ferreira et al., 2020).

The transformation toward digital education has increased the importance of lecturer innovativeness in higher education institutions (Bond et al., 2021). Innovation Theory emphasizes that innovativeness refers to the ability of individuals to generate, adopt, and implement new ideas, technologies, and creative solutions that improve organizational effectiveness (Rogers, 2003). Recent innovation studies explained that innovative lecturers are more capable of developing technology-based learning systems, interactive teaching methods, collaborative research activities, and adaptive educational strategies that improve academic outcomes (Khan et al., 2022).

Maritime higher education institutions face greater challenges because they operate within highly dynamic industrial and technological environments (Wang et al., 2021). According to Organizational Adaptation Theory, educational institutions must continuously align academic systems with industrial transformation, digitalization, and global competency standards (Burnes, 2020). Therefore, lecturers in maritime institutions are required to possess not only pedagogical competence but also innovative capability that supports technological adaptation and sustainable institutional performance (Santos & Serpa, 2020).

Information technology utilization has become one of the most important determinants of academic innovativeness (Venkatesh et al., 2012). Technology Acceptance Model and Digital Transformation Theory explain that effective technology utilization enhances work efficiency, communication quality, knowledge accessibility, and organizational productivity (Verhoef et al., 2021). Recent studies highlighted that lecturers who actively integrate digital platforms, online learning systems, and technological tools into academic activities tend to demonstrate higher innovativeness and stronger academic performance (Almaiah et al., 2020; Dwivedi et al., 2021). Technology utilization also enables lecturers to strengthen research collaboration, scientific publication productivity, and student engagement (Bond et al., 2021).

Knowledge management is another strategic factor influencing lecturer innovativeness and performance (Nonaka & Takeuchi, 1995). Knowledge-Based View Theory states that organizational knowledge is a valuable strategic resource that creates sustainable competitive advantage (Grant, 1996). Recent knowledge management studies emphasized that knowledge sharing, organizational learning, collaborative culture, and intellectual capital development significantly improve innovative behavior and organizational effectiveness (Donate & de Pablo, 2015; Shujahat et al., 2019). In higher education institutions, effective knowledge management supports lecturers in developing research competence, academic creativity, and collaborative innovation practices (Massaro et al., 2021).

Job satisfaction also plays an important role in shaping lecturer innovativeness and academic performance (Judge et al., 2020). Social Exchange Theory explains that employees who perceive organizational support, fairness, and professional recognition tend to demonstrate stronger commitment, creativity, and performance (Cropanzano et al., 2017). Recent studies found that lecturers with higher job satisfaction exhibit greater motivation to conduct research, publish scientific articles, develop innovative teaching methods, and participate in institutional development activities (Siengthai & Pila-Ngarm, 2016; Sabagh et al., 2021). Conversely, dissatisfaction may reduce work engagement, innovative behavior, and organizational commitment (Bakker & Demerouti, 2017).

Previous empirical studies have investigated the relationships among information technology utilization, knowledge management, job satisfaction, innovativeness, and employee

performance in various organizational contexts (Al-Emran et al., 2020; Aboramadan et al., 2021). However, limited studies specifically examine lecturer innovativeness as a mediating variable within maritime higher education institutions, particularly in developing countries (Wang et al., 2021). This research gap indicates the need for further investigation regarding the strategic role of lecturer innovativeness in improving academic performance in maritime higher education institutions.

Therefore, this study aims to analyze the influence of information technology utilization, knowledge management, and job satisfaction on lecturer innovativeness and academic performance in maritime higher education institutions. This study also examines the mediating role of lecturer innovativeness in strengthening academic performance. The findings are expected to contribute theoretically to innovation management and higher education literature while providing practical implications for improving institutional competitiveness, academic sustainability, and lecturer performance in maritime higher education institutions.

METHOD

This study employed a quantitative approach using an explanatory survey method to analyze the relationships among information technology utilization, knowledge management, job satisfaction, lecturer innovativeness, and academic performance. Quantitative research is considered appropriate for examining causal relationships among variables and testing theoretical models empirically through statistical analysis (Hair et al., 2021).

The research was conducted at maritime higher education institutions under the Ministry of Transportation located in Java Island, Indonesia. The population consisted of permanent lecturers working at maritime higher education institutions. These institutions were selected because they represent higher education organizations facing rapid technological transformation and increasing academic competitiveness in the maritime sector.

The sampling technique used in this study was saturated sampling, in which all members of the population were included as research respondents (Sekaran & Bougie, 2020). A total of 203 lecturers participated in this study. The respondents consisted of lecturers from several maritime higher education institutions, including maritime polytechnics and shipping colleges located in Java Island.

Data were collected through structured questionnaires distributed directly and electronically to respondents. The questionnaire items were measured using a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree (Joshi et al., 2015). The instrument development referred to previous studies and reputable theoretical frameworks to ensure construct validity and reliability.

Information technology utilization was measured using indicators related to digital learning systems, online communication, technological accessibility, and technology-based academic activities adapted from Technology Acceptance Theory (Venkatesh et al., 2012). Knowledge management was measured through knowledge sharing, organizational learning, collaboration, and knowledge application indicators based on Knowledge-Based View Theory (Nonaka & Takeuchi, 1995; Massaro et al., 2021). Job satisfaction was measured through work environment satisfaction, professional recognition, compensation, and career development indicators adapted from Job Satisfaction Theory (Judge et al., 2020).

Lecturer innovativeness was measured using indicators related to idea generation, creative problem-solving, technology adaptation, and innovative academic behavior based on Innovation Theory (Rogers, 2003). Academic performance was measured through teaching effectiveness, research productivity, scientific publication, and community service activities following higher education performance measurement standards (Alam & Parvin, 2021).

The validity test was conducted using Confirmatory Factor Analysis (CFA), while reliability testing employed Cronbach's Alpha and Composite Reliability values. According to

Hair et al. (2021), factor loading values above 0.50 and reliability coefficients above 0.70 indicate acceptable construct validity and reliability.

Data analysis was performed using Structural Equation Modeling (SEM) with LISREL software. SEM was selected because it enables simultaneous analysis of complex relationships among latent variables, including direct and mediating effects (Hair et al., 2021). The structural model evaluation used several Goodness-of-Fit indices, including Chi-Square, RMSEA, CFI, TLI, and GFI, to determine model suitability.

Hypothesis testing was conducted using t-values and standardized path coefficients. A hypothesis was accepted when the t-value exceeded 1.96 at a significance level of 0.05 (Hair et al., 2021). The mediating role of lecturer innovativeness was examined through indirect effect analysis within the SEM framework.

RESULTS AND DISCUSSION

Results

Respondent Characteristics

The respondents in this study consisted of 203 permanent lecturers from maritime higher education institutions under the Ministry of Transportation in Java Island, Indonesia. Based on gender, most respondents were male lecturers due to the dominance of the maritime education sector. In terms of educational background, the majority of respondents held master's degrees, while several respondents had doctoral qualifications. Most respondents also possessed more than five years of teaching experience, indicating adequate professional experience in academic activities.

Table 1. Respondent Characteristics

Characteristics	Category	Frequency	Percentage
Gender	Male	142	69.9%
	Female	61	30.1%
Education	Master's Degree	156	76.8%
	Doctoral Degree	47	23.2%
Teaching Experience	< 5 Years	38	18.7%
	5–10 Years	97	47.8%
	> 10 Years	68	33.5%

Validity and Reliability Testing

The validity test results showed that all indicators had factor loading values above 0.50, indicating acceptable convergent validity (Hair et al., 2021). Reliability testing also demonstrated that all variables achieved Cronbach's Alpha and Composite Reliability values above 0.70, confirming good reliability and internal consistency.

Table 2. Validity and Reliability Results

Variable	Factor Loading	Cronbach's Alpha	Composite Reliability	Result
Information Technology Utilization	0.71–0.88	0.91	0.93	Reliable
Knowledge Management	0.69–0.86	0.89	0.91	Reliable
Job Satisfaction	0.72–0.87	0.90	0.92	Reliable
Lecturer Innovativeness	0.74–0.89	0.92	0.94	Reliable
Academic Performance	0.70–0.88	0.91	0.93	Reliable

Structural Model Evaluation

The Structural Equation Modeling analysis indicated that the model achieved acceptable Goodness-of-Fit values. The RMSEA value was below 0.08, while CFI, TLI, and GFI values exceeded 0.90, indicating that the structural model fit the empirical data adequately (Hair et al., 2021).

Table 3. Goodness-of-Fit Results

Goodness-of-Fit Index	Cut-off Value	Result	Conclusion
Chi-Square/df	< 3.00	2.11	Good Fit
RMSEA	< 0.08	0.061	Good Fit
CFI	> 0.90	0.95	Good Fit
TLI	> 0.90	0.94	Good Fit
GFI	> 0.90	0.92	Good Fit

Hypothesis Testing

The hypothesis testing results demonstrated that information technology utilization positively and significantly influenced lecturer innovativeness (β = 0.31; t-value = 4.82). This finding indicates that lecturers who effectively utilize digital technology tend to demonstrate higher innovative behavior in academic activities.

Knowledge management also positively and significantly affected lecturer innovativeness (β = 0.36; t-value = 5.47). Effective knowledge sharing and organizational learning practices encourage lecturers to generate innovative ideas and collaborative academic activities.

Job satisfaction significantly influenced lecturer innovativeness (β = 0.29; t-value = 4.36). Lecturers with higher levels of job satisfaction showed greater creativity, motivation, and innovative academic behavior.

Furthermore, lecturer innovativeness positively and significantly affected academic performance (β = 0.52; t-value = 7.11). Innovative lecturers demonstrated better teaching effectiveness, research productivity, publication achievement, and community service performance.

Table 4. Hypothesis Testing Results

Hypothesis	Path	Path Coefficient	t-value	Result
H1	Information Technology Utilization → Lecturer Innovativeness	0.31	4.82	Supported
H2	Knowledge Management → Lecturer Innovativeness	0.36	5.47	Supported
H3	Job Satisfaction → Lecturer Innovativeness	0.29	4.36	Supported
H4	Lecturer Innovativeness → Academic Performance	0.52	7.11	Supported

The indirect effect analysis showed that lecturer innovativeness acted as a mediating variable between information technology utilization, knowledge management, job satisfaction, and academic performance. This finding indicates that lecturer innovativeness strengthens the influence of organizational and technological factors on lecturer academic performance.

The coefficient of determination showed that information technology utilization, knowledge management, and job satisfaction explained 58% of the variance in lecturer innovativeness. Meanwhile, the overall model explained 79% of the variance in academic performance, indicating strong explanatory power of the research model.

Discussion

The findings of this study demonstrate that information technology utilization, knowledge management, and job satisfaction significantly influence lecturer innovativeness, while lecturer innovativeness significantly improves academic performance in maritime higher education institutions. The results support several contemporary theories and previous empirical studies related to innovation management, organizational behavior, and higher education performance.

The Effect of Information Technology Utilization on Lecturer Innovativeness

The results indicate that information technology utilization positively and significantly influences lecturer innovativeness. This finding confirms that lecturers who effectively utilize digital technology tend to demonstrate greater creativity, adaptability, and innovation in academic activities. Technology Acceptance Theory explains that perceived usefulness and ease of technology utilization encourage individuals to adopt innovative behavior in organizational environments (Venkatesh et al., 2012).

The findings are consistent with previous studies showing that digital technology enhances academic creativity and innovative teaching behavior (Bond et al., 2021). Almaiah et al. (2020) found that technology integration improves lecturer capability in developing adaptive learning systems and interactive educational practices. Dwivedi et al. (2021) also emphasized that digital transformation strengthens organizational innovation capability and employee productivity. Similarly, Khan et al. (2022) argued that lecturers with strong digital competencies are more likely to adopt innovative academic approaches and collaborative learning methods. Nikolopoulou et al. (2021) further explained that digital learning environments encourage lecturers to experiment with new pedagogical models and technology-based instruction.

In maritime higher education institutions, technology utilization enables lecturers to integrate simulation systems, online learning platforms, and digital communication tools into academic processes. This condition supports innovative teaching methods and strengthens institutional competitiveness in responding to technological transformation within the maritime industry.

The Effect of Knowledge Management on Lecturer Innovativeness

The results demonstrate that knowledge management positively and significantly influences lecturer innovativeness. This finding supports Knowledge-Based View Theory, which states that organizational knowledge represents a strategic resource capable of creating innovation and sustainable competitive advantage (Grant, 1996).

The findings align with previous studies emphasizing the importance of knowledge sharing and organizational learning in improving innovative behavior. Nonaka and Takeuchi (1995) explained that knowledge creation processes stimulate innovation capability within organizations. Donate and de Pablo (2015) found that knowledge management practices significantly improve employee creativity and organizational innovation performance. Shujahat et al. (2019) also reported that knowledge sharing facilitates collaborative innovation and enhances problem-solving capability. Massaro et al. (2021) highlighted that higher education institutions implementing effective knowledge management systems demonstrate stronger research productivity and academic innovation. Elrehail et al. (2018) further emphasized that knowledge management strengthens intellectual capital and innovative work behavior among academic employees.

The implementation of knowledge management in maritime higher education institutions encourages lecturers to exchange research ideas, collaborate in scientific publications, and develop innovative educational strategies. Organizational learning and collaborative academic culture therefore become critical factors in strengthening lecturer innovativeness.

The Effect of Job Satisfaction on Lecturer Innovativeness

The findings reveal that job satisfaction positively and significantly influences lecturer innovativeness. This result supports Social Exchange Theory, which explains that employees who receive organizational support and positive work experiences tend to demonstrate stronger commitment, creativity, and innovative behavior (Cropanzano et al., 2017).

The results are consistent with previous empirical studies indicating that satisfied employees are more motivated to perform innovative activities. Judge et al. (2020) argued that job satisfaction contributes positively to employee creativity and work engagement. Bakker and Demerouti (2017) explained that supportive work environments increase motivation and innovative work behavior. Sabagh et al. (2021) found that lecturer satisfaction enhances research productivity and teaching innovation. Siengthai and Pila-Ngarm (2016) reported that academic employees with higher job satisfaction demonstrate stronger organizational commitment and creativity. Aboramadan et al. (2021) also emphasized that job satisfaction significantly improves innovative behavior and employee performance within educational institutions.

In maritime higher education institutions, lecturers who experience positive working conditions, career development opportunities, and organizational recognition tend to develop innovative teaching methods and participate actively in research and institutional development activities.

The Effect of Lecturer Innovativeness on Academic Performance

The results show that lecturer innovativeness positively and significantly influences academic performance. This finding confirms Innovation Theory, which explains that innovative behavior improves individual productivity, organizational effectiveness, and performance outcomes (Rogers, 2003).

The findings support previous studies demonstrating the relationship between innovativeness and academic performance. Khan et al. (2022) explained that innovative lecturers tend to produce higher teaching quality and research productivity. Alam and Parvin (2021) found that academic innovation improves institutional competitiveness and educational performance. Ferreira et al. (2020) argued that innovative capability strengthens organizational effectiveness and sustainable performance. Secundo et al. (2021) emphasized that innovation-oriented universities demonstrate stronger academic productivity and global competitiveness. Santos and Serpa (2020) also highlighted that lecturer innovativeness contributes significantly to adaptive learning systems, scientific publication performance, and collaborative research activities.

In the maritime higher education context, lecturer innovativeness improves the effectiveness of teaching processes, strengthens research outcomes, and enhances community service activities. Innovative lecturers are more capable of adapting educational strategies to technological and industrial changes, thereby improving institutional academic performance and sustainability.

Overall, the findings of this study confirm that lecturer innovativeness serves as a strategic mechanism linking technological capability, organizational knowledge, and job satisfaction with academic performance. These results contribute to the development of innovation management and higher education literature while emphasizing the importance of innovation-oriented academic environments in improving institutional competitiveness.

CONCLUSION

This study concludes that information technology utilization, knowledge management, and job satisfaction have positive and significant effects on lecturer innovativeness in maritime higher education institutions. The findings indicate that effective technological capability,

organizational knowledge sharing, and positive work satisfaction encourage lecturers to develop innovative academic behavior.

The study also confirms that lecturer innovativeness significantly improves academic performance, particularly in teaching effectiveness, research productivity, scientific publication, and community service activities. Lecturer innovativeness acts as a strategic mediating variable that strengthens the relationship between organizational factors and academic performance.

The findings support Dynamic Capability Theory, Knowledge-Based View Theory, Technology Acceptance Theory, and Innovation Theory, which emphasize the importance of technological adaptation, organizational learning, and innovative capability in improving organizational performance. In the context of maritime higher education institutions, lecturer innovativeness becomes an important strategic factor in strengthening institutional competitiveness and academic sustainability.

Practically, maritime higher education institutions should improve digital technology infrastructure, strengthen knowledge management systems, and enhance lecturer job satisfaction through organizational support, professional development, and collaborative academic culture. These strategies are expected to increase lecturer innovativeness and improve sustainable academic performance in higher education institutions.

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