THE RELATIONSHIP BETWEEN GOVERNANCE AND INDUSTRY EDUCATION INTEGRATION AND INSTITUTIONAL PERFORMANCE IN APPLIED ENGINEERING UNIVERSITIES

Pengfei LI[1], and Sirikawin KRUTKRONGPHAN[1]
1 Faculty of Education, Thongsook College, Thailand; sirikwinth7@gmail.com

ABSTRACT
The growing complexity of technological and industrial development has intensified expectations for applied engineering universities to enhance their institutional performance through effective governance systems and strong collaboration with industry. This study investigates the relationships between governance institutional positioning, industry-education integration, and institutional performance within applied engineering universities. A quantitative research design was employed to examine these relationships through statistical correlation analysis. Data were collected from 300 respondents comprising full-time faculty members, administrative staff, and selected industry partners who actively collaborate with universities. The research instrument consisted of four sections, including demographic information and three main constructs measured using a five-point Likert scale: governance institutional positioning, industry-education integration, and institutional performance. Prior to data collection, item evaluation and reliability testing were conducted to ensure the quality of the questionnaire. Descriptive statistics were used to summarize demographic characteristics, while Pearson correlation analysis was applied to test the hypotheses regarding the strength and significance of the relationships among the variables. The results revealed that the majority of respondents were male, younger than 30 years old, had less than five years of work experience, and represented industry partners. Hypothesis testing showed that governance institutional positioning demonstrated a strong and significant relationship with institutional performance. Similarly, industry-education integration exhibited a very high and statistically significant correlation with institutional performance. These findings highlight the pivotal role of governance structures and industry collaboration as key determinants of institutional success. The study provides empirical evidence that can guide policy formulation, strategic planning, and partnership development for applied engineering universities striving to enhance their overall performance.
Keywords: Governance Institutional, Industry-Education Integration, Institutional Performance

INTRODUCTION

The rapid evolution of technology-intensive industries has reshaped expectations for higher education institutions, particularly those specializing in applied engineering. Universities are now required to enhance institutional performance through effective governance systems, strategic management, and responsiveness to societal demands. Governance plays an essential role in establishing institutional direction, ensuring accountability, and supporting performance-driven cultures that enhance academic and operational quality (de Boer & File, 2020). Effective governance institutional positioning contributes to improved decision-making, optimized resource allocation, and strengthened institutional competitiveness, ultimately influencing outcomes such as curriculum quality, research productivity, and student learning performance (Salmi, 2017; Toma, 2010).

Simultaneously, the integration between industry and education has become increasingly critical for applied engineering universities. Strong partnerships with industry sectors foster knowledge exchange, promote experiential learning, and ensure that academic programs align with technological advancements and labor market needs. Prior studies indicate that industry-education integration enhances innovation capacity, supports curriculum modernization, and improves graduate employability, all of which contribute significantly to institutional performance (Perkmann et al., 2013; Ankrah & Omar, 2015). The effectiveness of this integration is further influenced by factors such as absorptive capacity, shared knowledge structures, and collaborative goal alignment, which facilitate the transfer of industrial expertise into academic practice (Cohen & Levinthal, 1990; Veugelers & Cassiman, 2005).

Although governance and industry-education integration have been widely acknowledged as key drivers of institutional development, existing research often examines these domains independently, leaving a theoretical and empirical gap regarding how these elements simultaneously shape institutional performance in applied engineering contexts. Understanding these relationships is particularly important for universities operating in rapidly industrializing economies, where performance expectations are closely tied to technological competitiveness and collaboration with external stakeholders. This study therefore seeks to address these gaps by investigating the relationships between governance institutional positioning, industry-education integration, and institutional performance in applied engineering universities.

The objective of this study is to examine how governance institutional positioning and industry-education integration are associated with institutional performance in applied engineering universities.

LITERATURE REVIEWS

Relationship between Governance and Institutional Positioning and Institutional Performance

Governance institutional positioning has long been recognized as a central determinant of performance in higher education institutions. Governance refers to the structures, policies, and managerial mechanisms through which universities allocate resources, coordinate academic activities, and pursue strategic objectives. Well-designed governance systems enhance institutional autonomy, improve decision-making efficiency, and strengthen accountability, all of which contribute directly to organizational performance (de Boer & File, 2020). According to Salmi (2017), institutions with clear governance frameworks and effective administrative processes tend to achieve higher levels of academic quality, innovation capacity, and global competitiveness. This view is supported by Toma (2010), who emphasized that strategic governance practices—particularly those related to leadership, policy alignment, and resource management—elevate institutional capability and performance outcomes.

Furthermore, prior studies have highlighted the relationship between governance positioning and performance across diverse educational contexts. Well-structured governance systems

facilitate coordination among departments, promote coherence in academic policy, and enhance the institution's responsiveness to external stakeholders (Marginson, 2016). Effective governance also improves internal quality assurance processes, thereby influencing performance indicators such as research productivity, curriculum quality, and student satisfaction (Aghion et al., 2010). In applied engineering universities, where program relevance and operational coherence are particularly important, governance positioning plays a decisive role in determining institutional success. Based on these theoretical and empirical foundations, the first hypothesis is proposed:

H1: There is a significant relationship between governance institutional positioning and institutional performance.
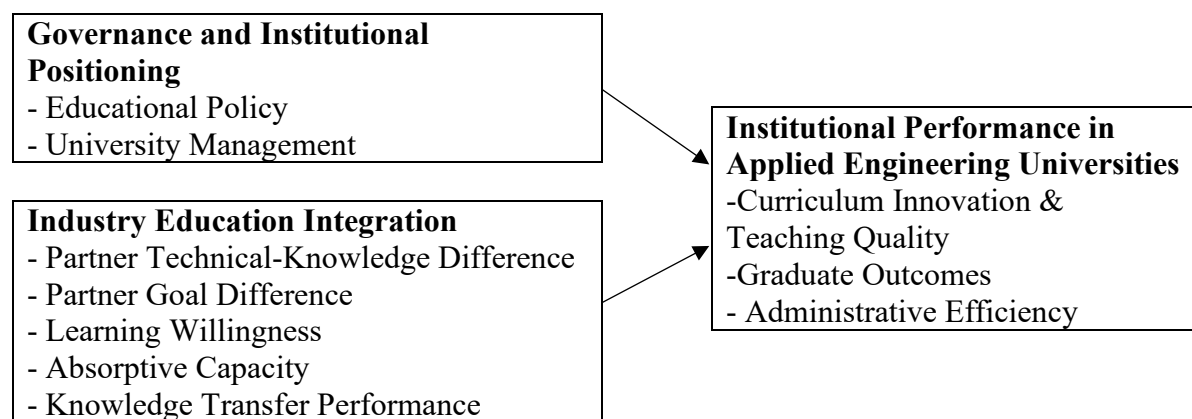
Relationship between Industry Education Integration and Institutional Performance

Industry-education integration has become an essential component of higher education development, particularly in fields that require strong alignment between academic programs and labor-market needs. Industry integration encompasses collaborative activities such as joint curriculum design, internship programs, shared research projects, and knowledge transfer mechanisms. Such collaboration enhances institutional relevance, strengthens student competencies, and improves graduate employability, all of which contribute to overall institutional performance (Perkmann et al., 2013). Previous research indicates that institutions with effective industry partnerships experience higher levels of innovation, increased knowledge exchange, and more competitive educational outcomes (Ankrah & Omar, 2015).

A key factor in this relationship is the concept of absorptive capacity, which determines the institution's ability to acquire, assimilate, and apply industry knowledge to academic processes (Cohen & Levinthal, 1990). Institutions with higher absorptive capacity are better positioned to translate industrial expertise into curricular improvements, research advancement, and student skill development. Studies have also shown that well-aligned goal structures, shared technical knowledge, and effective communication between universities and industry partners enhance the performance of cooperative projects and support institutional growth (Veugelers & Cassiman, 2005). Moreover, collaborative engagement promotes knowledge transfer that strengthens teaching quality and research productivity, leading to improved institutional performance (Plewa et al., 2015). Based on the empirical evidence and theoretical underpinnings, the following hypothesis is derived:

H2: There is a significant relationship between industry-education integration and institutional performance.

From the literature review, the conceptual framework can be drawn as shown in Figure 1.

Figure 1 Conceptual Framework

RESEARCH METHODOLOGY

To investigate the relationships between governance institutional positioning, industry-education integration, and institutional performance, this study employed a quantitative research design appropriate for examining correlational relationships using Pearson correlation analysis. The target population consisted of full-time faculty members, administrative staff, and industry partners affiliated with applied engineering universities. These individuals were selected because they possess direct experience with governance structures, institutional management processes, and forms of academic-industry collaboration that are central to the study's objectives.

A total of 300 participants were selected using a combination of purposive and convenience sampling. Purposive sampling was first applied to identify individuals who met specific criteria relevant to the study, including faculty members with administrative responsibilities, staff involved in institutional governance or quality assurance processes, and industry partners who regularly collaborated with the university through joint projects, internships, or training programs. These criteria ensured that respondents had substantive knowledge of governance positioning and industry-education integration. Following this purposive selection, convenience sampling was used to recruit participants who were available and willing to complete the questionnaire during the data collection period. This approach enabled efficient access to qualified respondents while maintaining a sufficiently large sample appropriate for correlational analysis. Although this sampling strategy supported the inclusion of diverse roles associated with governance and collaboration, the use of non-probability sampling limits the generalizability of the findings beyond similar institutional contexts.

The questionnaire was divided into four parts. The first section collected demographic information including gender, age, educational background, job position, and work experience. The second section measured governance institutional positioning, the third section assessed industry-education integration, and the fourth section examined institutional performance. All constructs were measured using five-point Likert scales ranging from "strongly disagree" to "strongly agree." Prior to full deployment, the questionnaire underwent expert content validation and reliability testing to confirm its appropriateness for the target population.

Data collection was conducted by distributing the questionnaire to faculty members, administrative personnel, and designated industry partners who were actively engaged in academic administration or collaborative activities. Respondents were provided with adequate time to complete the questionnaire to ensure thoughtful and accurate responses.

For data analysis, descriptive statistics including frequency, percentage, mean, and standard deviation were used to summarize demographic characteristics and general response patterns. Pearson correlation analysis was then conducted to determine the strength and direction of the relationships among governance institutional positioning, industry-education integration, and institutional performance. This analytical approach was selected because it effectively identifies linear associations between continuous variables and aligns directly with the study's hypotheses. The results are presented in both narrative and tabulated formats in the subsequent sections.

RESEARCH RESULTS

Results of general data analysis of respondents

Most of the respondents were male, totaling 215 individuals. A majority were under 30 years of age, accounting for 220 respondents (73.3%). Most participants were industry partners, totaling 158 individuals (52.67%), and 195 respondents (65.00%) had less than five years of work experience.

Level of Respondents' Opinions

Table 1 Shows the mean and standard deviation of governance institutional

Governance Institutional	$\overline{X}$	SD	Level of opinion
Educational Policy	4.61	.69	Highest
University Management	4.62	.84	Highest
Total	**4.61**	**.74**	**Highest**

The analysis of governance institutional indicators reveals consistently high levels of agreement among respondents. Both Educational Policy ($\overline{X}$ = 4.61, SD = .69) and University Management ($\overline{X}$ = 4.62, SD = .84) are rated at the "highest" level, indicating that stakeholders perceive governance mechanisms as being very well implemented within applied engineering universities. The overall mean score ($\overline{X}$ = 4.61, SD = .74) further supports the notion that the institutional governance environment is perceived as robust and highly effective. This high level of governance support forms a strong foundation for institutional development and operational efficiency.

Table 2 Shows the mean and standard deviation of industry-education integration

Industry-Education Integration	$\overline{X}$	SD	Level of opinion
Partner Technical-Knowledge Difference			Highest
Partner Goal Difference	4.61	.86	Highest
Learning Willingness	4.62	.85	Highest
Absorptive Capacity	4.59	.88	Highest
Knowledge Transfer Performance	4.61	.83	Highest
Total	**4.62**	**.83**	**Highest**

The descriptive findings illustrate that all dimensions of industry-education integration are perceived at the highest level. Notably, Learning Willingness ($\overline{X}$ = 4.62, SD = .85) and Knowledge Transfer Performance ($\overline{X}$ = 4.61, SD = .83) demonstrate particularly strong perceptions, suggesting that collaborative exchanges between industry and universities are highly valued. Similarly, Partner Technical-Knowledge Difference and Partner Goal Difference score at the highest level, indicating that respondents acknowledge the importance of bridging expertise and aligning goals between partners. The overall mean score ($\overline{X}$ = 4.62, SD = .83) emphasizes that the integration between industry and education is functioning at an exceptionally high level across the sample institutions.

Table 3 Shows the mean and standard deviation of institutional performance

Institutional performance	$\overline{X}$	SD	Level of opinion
Curriculum Innovation & Teaching Quality	4.64	.81	Highest
Graduate Outcomes	4.62	.83	Highest
Administrative Efficiency	4.61	.86	Highest
Total	**4.62**	**.81**	**Highest**

Institutional performance indicators also reflect very positive perceptions. The highest mean appears in Curriculum Innovation and Teaching Quality ($\overline{X}$ = 4.64, SD = .81), signifying that curriculum development and teaching effectiveness are regarded as outstanding in applied engineering universities. Graduate Outcomes ($\overline{X}$ = 4.62, SD = .83) and Administrative Efficiency ($\overline{X}$ = 4.61, SD = .86) likewise demonstrate strong performance levels. The overall

mean ($\overline{X}$ = 4.62, SD = .81) confirms that institutional performance is perceived as highly successful, reflecting strong educational outcomes, innovation, and management practices.

Relationship between Governance Institutional Positioning and Institutional performance

Table 4 Shows the relationship between governance institutional positioning and institutional performance

Governance Institutional Positioning	Institutional Performance		
	r	Sig.	Level of correlations
Educational Policy	.871**	.000	Very highly positive relationship
University Management	.936**	.000	Very highly positive relationship

** Correlation is significant at the 0.01 level
* Correlation is significant at the 0.05 level

The results indicate that governance institutional positioning is significantly associated with institutional performance. Educational Policy shows a very high positive correlation (r = .871, p < .01), and University Management also demonstrates a very high positive correlation (r = .936, p < .01), confirming a statistically significant relationship at the .01 level.

Relationship between Industry-Education Integration and Institutional Performance

Table 5 Shows the relationship between industry-education integration and institutional performance

Industry-Education Integration	Institutional Performance		
	r	Sig.	Level of correlations
Partner Technical-Knowledge Difference	.953**	.000	Very highly positive relationship
Partner Goal Difference	.949**	.000	Very highly positive relationship
Learning Willingness	.957**	.000	Very highly positive relationship
Absorptive Capacity	.956**	.000	Very highly positive relationship
Knowledge Transfer Performance	.959**	.000	Very highly positive relationship

** Correlation is significant at the 0.01 level
* Correlation is significant at the 0.05 level

For industry-education integration, all indicators exhibit very high positive correlations with institutional performance at the .01 significance level. Partner Technical-Knowledge Difference (r = .953, p < .01), Partner Goal Difference (r = .949, p < .01), Learning Willingness (r = .957, p < .01), Absorptive Capacity (r = .956, p < .01), and Knowledge Transfer Performance (r = .959, p < .01) all present strong and statistically significant relationships.

DISCUSSION & CONCLUSION

The findings of this study reveal two central insights regarding the role of governance institutional positioning and industry-education integration in shaping institutional performance within applied engineering universities. The results show that educational policy and university management are both strongly and significantly correlated with institutional performance, with coefficients indicating exceptionally high positive relationships. Although such strong correlations support previous research emphasizing the importance of governance quality, policy clarity, and administrative coherence in higher education (de Boer & File, 2020; Salmi, 2017; Toma, 2010), the magnitude of these coefficients warrants careful interpretation. Extremely high correlations above .90 may suggest conceptual overlap between constructs, shared measurement tendencies, or potential common method bias, particularly when self-

reported data are collected from respondents who are members of the same institution. These considerations indicate that while governance-related elements indeed play a substantial role, the observed strength of the relationships may partly reflect the interconnected and mutually reinforcing nature of governance processes within applied universities.

The results concerning industry-education integration further highlight its essential role in strengthening institutional outcomes. All indicators including differences in technical knowledge, differences in goals, learning willingness, absorptive capacity, and knowledge transfer performance exhibit very high and statistically significant correlations with institutional performance. These findings align with research identifying university-industry collaboration as a catalyst for innovation, curriculum modernization, and institutional competitiveness (Ankrah & Omar, 2015; Perkmann et al., 2013). However, as with governance dimensions, the very high correlation values suggest that respondents may perceive these domains as strongly intertwined, reflecting the operational reality that applied engineering universities closely integrate industry participation into teaching, training, and innovation activities. This interconnectedness may also contribute to inflated correlation coefficients due to overlapping functions between collaboration processes and institutional performance indicators. Nonetheless, the results affirm that knowledge exchange, experiential learning systems, and absorptive capacity are central components driving institutional performance, consistent with existing literature on knowledge transfer in university-industry partnerships (Veugelers & Cassiman, 2005).

When considered together, the findings confirm both hypotheses and indicate that governance institutional positioning and industry-education integration serve as significant and mutually reinforcing contributors to institutional performance within the applied engineering context. Institutions with structured governance mechanisms and active, coherent industry partnerships are better positioned to achieve improvements in academic quality, innovation capability, and student outcomes. These patterns remained consistent despite the high overall mean scores reported across variables. The elevated mean values, while indicating favorable perceptions, must be interpreted with caution, as respondents working within the same institutional environment may exhibit social desirability bias or organizational loyalty that leads to uniformly positive ratings. Therefore, the interpretation of institutional strengths should focus on relative differences across dimensions rather than absolute levels of agreement.

In conclusion, this study contributes to the literature by demonstrating that institutional performance is strongly associated with both governance quality and industry integration, while also highlighting the need for careful interpretation of exceptionally high correlations and uniformly positive mean scores. The findings suggest that future research could expand on these insights by introducing mediating or moderating factors such as organizational culture, leadership styles, or digital transformation capacity to better understand the mechanisms through which governance and industry-education integration influence long-term institutional development. Additionally, employing mixed-method approaches or multi-source data collection could help mitigate common method bias and provide a more nuanced understanding of how these systems operate across diverse applied engineering university contexts.

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