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ORGANIZATIONAL CULTURE, UNIVERSITY-INDUSTRY COLLABORATION STRATEGIES, AND INNOVATION PROGRAMS IN UNIVERSITIES: THE MODERATING ROLE OF GOVERNMENT FUNDING

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ABSTRACT
This study examines the effects of organizational culture, university-industry collaboration strategies, and government funding on innovation programs in Indonesian public universities. The research objectives were to identify the key factors that influence innovation outcomes and explore the moderating role of government funding. A quantitative research approach was adopted focusing on 73 public universities in Indonesia. Data were collected using a structured questionnaire distributed to senior administrators and faculty members involved in innovation programs and university-industry collaborations. The key variables measured included organizational culture, university-industry collaboration strategies, innovation programs, and government funding, using a 7-point Likert scale. A multiple linear regression analysis was conducted to test the hypothesized relationships and interaction effects. The findings reveal that organizational culture and university-industry collaboration strategies significantly enhance innovation programs, with government funding amplifying these effects. A larger university size was found to negatively impact innovation outcomes, while overall funding levels had a positive but smaller effect than other variables. The results highlight the importance of fostering supportive organizational cultures, developing robust collaboration strategies, and securing adequate government funding to drive innovation in academic institutions. Future research should explore the additional factors that influence innovation outcomes in various contexts. Recommendations include strengthening university-industry partnerships and advocating for sustained government support to enhance the innovation capacity of universities.

Keywords: Organizational culture; innovation programs; government funding; university-industry collaboration strategies

BUDAYA ORGANISASI, STRATEGI KOLABORASI UNIVERSITAS-INDUSTRI DAN PROGRAM INOVASI DI UNIVERSITAS. PERAN MODERASI DARI PENDANAAN PEMERINTAH

ABSTRAK
Penelitian ini mengkaji dampak budaya organisasi, strategi kolaborasi universitas-industri, dan pendanaan pemerintah terhadap program inovasi di universitas negeri di Indonesia. Tujuan penelitian adalah untuk mengidentifikasi faktor kunci yang mempengaruhi hasil inovasi dan mengeksplorasi peran moderasi pendanaan pemerintah. Pendekatan penelitian kuantitatif diadopsi, dengan fokus pada 73 universitas negeri di Indonesia. Data dikumpulkan menggunakan kuesioner terstruktur yang didistribusikan kepada administrator senior dan anggota fakultas yang terlibat dalam program inovasi dan kolaborasi universitas-industri. Variabel kunci yang diukur termasuk budaya organisasi, strategi kolaborasi universitas-industri, program inovasi, dan pendanaan pemerintah, menggunakan skala Likert 7 poin. Analisis regresi linier berganda dilakukan untuk menguji hubungan dan efek interaksi yang dihipotesiskan. Temuan menunjukkan bahwa budaya organisasi dan strategi kolaborasi universitas-industri secara signifikan meningkatkan program inovasi, dengan pendanaan pemerintah memperkuat efek ini. Ukuran universitas yang lebih besar ditemukan berdampak negatif terhadap hasil inovasi, sementara tingkat pendanaan secara keseluruhan memiliki efek positif tetapi lebih kecil dibandingkan dengan variabel lainnya. Hasil ini menyoroti pentingnya membina budaya organisasi yang mendukung, mengembangkan strategi kolaborasi yang kuat, dan mendapatkan pendanaan pemerintah yang memadai untuk mendorong inovasi di institusi akademik. Penelitian lebih lanjut harus mempertimbangkan untuk mengeksplorasi faktor tambahan yang mempengaruhi hasil inovasi dalam konteks yang berbeda. Rekomendasi termasuk memperkuat kemitraan universitas-industri dan mengadvokasi dukungan pemerintah yang berkelanjutan untuk meningkatkan kapasitas inovasi universitas.

Kata kunci: Budaya organisasi; program inovasi; pendanaan pemerintah; strategi kolaborasi universitas-industri

INTRODUCTION

The potential to foster academic and industrial advancement has garnered significant interest in the interaction between university-industry partnership strategies, innovation programs, and organizational culture (Sassi & Mshenga, 2024). It is imperative to understand these components to

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enhance educational and industrial outcomes and to encourage innovation. To address the increasing complexity of knowledge bases and extensive distribution of expertise, it is imperative to establish robust strategic partnerships and learning networks (Tseng, Huang, & Chen, 2020). Zagenczyk and Powell (2023) conducted research that emphasizes the fact that innovation is frequently observed in networks of learning, rather than within specific organizations. This emphasizes the necessity of placing substantial emphasis on collaborative frameworks.

Organizational culture within academic institutions significantly influences the perception and implementation of novel teaching methodologies. Zhu and Engels (2014) demonstrated that educators and students are considerably more inclined to adopt educational innovations when they undergo an organizational culture that prioritizes positivity. This environment is conducive to technical and collaborative advancement, thereby establishing fertile ground for creativity. However, the success of university-industry interactions is typically contingent upon the congruence of both organizational cultures. According to Ehrismann and Patel (2015), the existence of distinct cultural and operational frameworks between academic and industrial collaborators can result in significant challenges. This underscores the need to employ strategies that foster mutual understanding and consent.

Collaboration between universities and industries has become an essential factor in the promotion of innovation, particularly in sectors that require technical expertise and have a competitive edge (Pujotomo, Syed Hassan, Ma'aram, & Sutopo, 2023). Efficient collaboration models such as those that employ open innovation frameworks underscore the importance of strategic objective alignment, collaborative expertise, and mutual trust. Bellini, Piroli, and Pennacchio (2019) emphasized the importance of prior collaboration experience and the development of strategic abilities for enterprises to effectively leverage academic partnerships. However, it appears that there is a significant lack of trust between universities and industries. Prior studies found that universities in Indonesia tend to distant themselves from industries as they claimed that industries focus more on generating profit than collaborating with educational institutions (Moeliodihardjo, Soemardi, Brodjonegoro, and Hatakenaka, 2012).

Consequently, the participation of government funds in these collaborative endeavors is essential. Government support not only provides financial assistance but also creates a policy environment that encourages and enhances innovation activities (Hansen, Mork, & Welo, 2019).

Despite the recognition of the benefits of university-industry collaboration, there is a substantial lack of understanding regarding the moderating influence of government funding on these partnerships (Nsanzumuhire & Groot, 2020). The current study primarily concentrates on the direct impact of organizational culture and collaborative strategies on innovation, occasionally disregarding the significance of external financial assistance on these dynamics. The study conducted by Lin and Yang (2020) underscores the necessity of conducting a comprehensive examination of the relationship between government financing, collaborative tactics, and organizational culture, which has been neglected. To gain a comprehensive understanding of the collective impact of these factors on innovation programs at universities, it is imperative to conduct such investigations.

The phenomenon stated above generates three research questions. First, to what extend does university-industry partnership influence innovation programs in universities? Second, to what extend does organizational culture affect innovation programs in universities? Third, to what extend does the government fund moderates university-industry partnership and organizational culture to innovation programs? Therefore, the purpose of this research is to examine the relationship between innovation programs in universities, university-industry partnership approaches, and organizational culture, with a particular focus on the moderating effect of government financing. To offer a comprehensive and detailed understanding of the numerous factors that influence the dynamics under investigation, the research will also consider control variables such as the institution size, levels of financing, and faculty expertise. The findings of this study contribute significantly to the development of strategic frameworks that universities and corporations can employ to enhance innovation outcomes and collaborative endeavors. Ultimately, this fosters a more innovative and interconnected academic-industrial environment, providing essential information to industry executives, educational institutions, and policymakers.

METHOD

This study uses a quantitative research technique to investigate the relationships between innovation initiatives, university-industry partnership methods, and organizational culture in universities, with government funding acting as a moderating influence (Apuke, 2017). This study

focuses on public universities in Indonesia and provides a comprehensive examination of the many factors at play within the setting of a growing country. The scope of this study includes all the public universities in Indonesia. Seventy-five public study selected a sample of 75 public institutions. The data were successfully retrieved from 73 institutions, leading to a high response rate, which enhanced the generalizability and reliability of the results.

The research examined the key elements, including organizational culture, university-industry partnership strategies, innovation initiatives, and government support, using a structured questionnaire. The operationalization of each concept was accomplished using several questions on a 7-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree). We verified the respondents' knowledge and expertise by sending the questionnaire to senior administrators and faculty members who were actively engaged in university-industry cooperation and innovation initiatives. The questionnaire included inquiries on the number of faculty members, the scope and level of industrial partnerships, financial investments, and research outcomes.

This analysis examines many crucial variables to understand the factors that impact innovation results in Indonesian public institutions. The variables that were not influenced or reliant on other factors were as follows: the assessment of the university's organizational culture focused on evaluating its values, beliefs, and norms on innovation and collaboration. University-industry collaboration strategies are measured by assessing the effectiveness, frequency, and strategic alignment of partnerships with industry. The evaluation of innovation programs was based on the completion, effectiveness, and outcomes of the innovation initiatives implemented within the university. The measurements of the dependent variable are innovation outcomes, including the quantification of patents, achievements in commercialization, the establishment of companies, and breakthroughs in technology. The moderating variable was government financing, which was assessed using items that measured the degree and impact of financial assistance provided by the government on research activities.

Control variables, such as university size, funding levels, faculty experience, and existing infrastructure, were considered to ensure that the study examined the possible aspects that may influence the results. The allocation of research money was determined by assessing the overall financial resources that were available. Faculty talent was evaluated on the basis of their credentials and research experience. Current infrastructure was evaluated by considering the availability of research facilities and equipment. University size was quantified based on the total number of faculty members and students.

The postulated connections between organizational culture, university-industry partnership methods, innovation initiatives, and innovation results were examined by multiple linear regression, with government financing acting as a moderating factor (Shrestha, 2020). The data obtained were analyzed. This research is appropriate for conducting multiple linear regressions, as it allows for the examination of the direct impacts of the independent factors on the dependent variable as well as the interaction effects that include the moderating variable. Sensitivity and robustness tests were conducted to ensure the reliability and validity of the findings.

To verify the regression models, we conducted tests to assess heteroscedasticity, multicollinearity, and residual normality (Haddad, Rached, Jajou, & Hage, 2019). In addition, interaction terms were created to examine the influence of government financing on the connections between the independent and dependent variables. The findings provide a thorough comprehension of how government financing, university-industry engagement tactics, and organizational culture all influence the innovation programs of Indonesian public institutions.

RESULTS AND DISCUSSION

Table 1. Demographic Information

Category	Options	Freq	%
Number of Faculty Members	Less than 100	5	6.9
	100-499	15	20.6
	500-999	20	27.4
	1000-1999	18	24.7
	2000 or more	15	20.6
Number of Students	Less than 1,000	3	4.1
	1,000-4,999	12	16.4
	5,000-9,999	22	30.1
	10,000 19,999	20	27.4
	20,000 or more	16	21.9
Location of University	Urban area	30	41.1
	Suburban area	25	34.3
	Rural area	18	24.7
Level of Government Funding	Less than $1 million	10	13.7
	$1 million - $5 million	25	34.3

	$5 million – $10 million	20	27.4
	More than $10 million	18	24.7
Frequency of Industry Collaboration	Never	5	6.9
	Rarely (1-2 times per year)	20	27.4
	Occasionally (3-5 times per year)	25	34.3
	Frequently (more than 5 times per year)	23	31.5
N= 73			

Source: Field Data (2024)

Table 1 provides a comprehensive examination of the demographic characteristics of the 73 public institutions that participated in this study. The table categorizes universities based on the frequency of industrial partnerships, degree of government financing, frequency of student enrolment, size of faculty, and geographical location. Demographic data are indispensable for understanding the context and diversity of the institutions that are the subject of this research. The distribution of faculty across institutions illustrates a diverse and heterogeneous environment. With faculty sizes ranging from 500 to 999 individuals, the most prevalent form among institutions was the one with a substantial proportion (27.4 %). Universities with a faculty size of 1000 to 1999 comprised 24.7% of the sample, while those with a faculty size of 100 to 499 and 2000 or more represented 20.6% each. Only 6.9% of the institutions had faculty sizes of less than 100 individuals. The distribution of faculty size suggests that medium-to-large-sized institutions are prevalent. This is in accordance with prior research that underscores the importance of a substantial faculty foundation for the successful pursuit of research and innovation (Zhu & Engels, 2014).

In terms of student enrolment, the majority of institutions (30.1 %) had a student population ranging from 5000 to 9999. Following closely behind are Institutions with student populations between 10,000 and 19,999 accounted for 27.4% of the sample. In the sample, 21.9% of the universities had a student population of 20,000 or more, indicating a substantial number of large educational institutions. Universities with a student population of 1000 to 4999 comprise 16.4% of the total, while those with fewer than 1000 students are the least prevalent, comprising only 4.1%. The student body sizes of the universities in this dataset are diverse, with a substantial number of larger institutions. Bellini et al. (2019) have previously suggested that larger student populations are frequently linked to higher levels of research output and innovation activities. This pattern was consistent with the findings of the present study. The geographical distribution indicates that metropolitan regions are home to a significant number of universities, with 41.1% of them located there. Furthermore, suburban regions accounted for 34.3% of the institutions, while rural regions accounted for 24.7%. This implies that colleges are more prevalent in regions with a higher population density and more advanced development, which may affect their capacity to access resources and opportunities for collaboration. Existing research supports this assertion, indicating that colleges situated in metropolitan regions frequently possess superior infrastructure and greater opportunities for industrial collaboration (Shi & Wang, 2024).

A diverse array of government financing is evident. This funding level is the most common, with approximately 34.3% of colleges receiving funding between $1 million and $5 million. Organizations that received funding between $5 million and $10 million accounted for 27.4% of the sample, whereas those that received funding exceeding $10 million accounted for 24.7%. A total of 13.7% of the universities received government funding of less than US$ 1 million. This variation underscores the disparities in financial resources and government support among universities. Prior research has demonstrated that adequate funding is essential for promoting innovation and facilitating collaborative research endeavors (Hansen et al., 2019; Rådberg & Löfsten, 2024). The degree to which institutions participate in industrial partnerships significantly varies. Approximately 34.3% of colleges engage in sporadic partnerships, which occur to 3-5 times per year, and 31.5% engage in regular collaborations, which occur over five times per year. Of the colleges, 27.4% reported occasional partnerships, which occur 1-2 times per year, while 6.9% reported no engagement with the industry. Most institutions demonstrate a distinct inclination to actively engage with the industry. These types of collaborations are frequently regarded as essential for fostering innovation, as they combine a variety of resources and knowledge, thereby enhancing the potential for technological advancement (Pujotomo et al., 2023; Vivona, Demircioglu, & Audretsch, 2023).

Table 2. Descriptive Statistics

	Innovation Programs	Gov't Funding	Organizational Culture	University-Industry Collaboration Strategies
Count	73	73	73	73
Mean	5	4.38	5.62	5
Standard Deviation	1.4	1.02	1.02	1.4
Minimum	3	3	4	3
25th Percentile (Q1)	4	4	5	4
Median (Q2)	5	4	6	5
75th Percentile (Q3)	6	5	6	6
Maximum	7	6	7	7

Source: Field Data (2024)

The standard deviation for innovation programs (IP) was 1.4, and the average value was 5. Universities generally assess their innovation programs as relatively high on average; however, there is significant variation in their responses. The IP values, which range from three to seven, suggest that some institutions consider their innovation programs to be moderately successful, whereas others regard them as exceedingly high. Bellini, Piroli, and Pennacchio (2019) emphasize that the diversity in innovation capacities across various institutions is a consequence of differences in strategic priorities and resources. This variety of perspectives is consistent with our findings.

The standard deviation of government money is 1.02, with a mean value of 4.38. This implies that universities receive an average amount of government funding. Universities receive a variety of financial support, with some receiving minimal funding and others receiving substantial support. The fluctuation in financing is essential, as Hansen, Mork, and Welo (2019) have demonstrated in their previous study that ample government funding is essential for the continuation of research and innovation endeavors. This funding provided the necessary financial resources to facilitate progress and collaboration.

Organizational Culture has a mean score of 5.62 and a standard deviation of 1.02, which suggests that the organization's culture in terms of creativity and cooperation within these colleges is generally favourable. The value of 4 is the lowest, while the maximum is 7, indicating a spectrum that ranges from moderately positive to very positive organizational cultures. These results are following Zhu and Engels' (2014) observation that an organization's culture is essential for establishing an environment that fosters collaboration and innovation. This, in turn, inspired both students and educators to engage in innovative and inventive endeavors.

The university-industry collaboration strategies (UIC) have an average value of five and a standard deviation of 1.4. The minimum value was 3, whereas the maximum was 7, with values ranging from 3 to 7. This range suggests a significant degree of diversity in the extent to which colleges collaborate with industrial collaborators. While some institutions demonstrate highly dynamic and efficient collaborative strategies, others have lower engagement levels. According to Pujotomo, Syed Hassan, Ma'aram, and Sutopo (2023), the establishment of robust partnerships between universities and industries is essential for the utilisation of external knowledge and resources, thereby enhancing the overall innovation capacity of institutions.

The quartiles for each variable provided additional information regarding the distribution of responses. For instance, the 25th percentile (Q1) for IP is four, which signifies that 25% of institutions evaluate their innovation programs as four or lower. For IP, the median classification is five, which indicates that 50% of universities evaluate their innovation programs at a level of five or lower. The 75th percentile (Q3) is six, which means that 25% of the institutions rated their innovation programs at a score of six or higher. These quartiles are indispensable for understanding the comprehensive range of innovation capabilities and support among the

universities under investigation, as they offer valuable information on both the average and the range of the data.

Table 3. Pearson Correlation Matrix

	IP	GF	OC	UIC	US	FL
IP	1					
GF	0.432	1				
OC	0.332	0.541	1			
UIC	0.386	0.332	0.832	1		
US	0.271	0.205	0.112	0.271	1	
FL	0.055	0.054	0.006	0.055	0.027	1

Note: IP: Innovation Programs, GF: Government Funding, OC: Organizational Culture, UIC: University-Industry Collaboration Strategies, US: University Size, FL: Funding Levels

Source: Field Data (2024)

The Pearson correlation matrix in Table 3 depicts the strength and direction of the linear associations among these variables, providing a full comprehension of their interconnections within the context of public universities in Indonesia. The correlation value between government funding and innovation programs is 0.432, suggesting a somewhat good association. This indicates that the effectiveness and existence of innovation projects are often enhanced as government financing increases. This link aligns with the findings of de Jesus and Kamlot (2023), who emphasized the pivotal role of government assistance in fostering innovation within academic institutions. Financial resources enable the advancement and execution of innovative initiatives.

The correlation coefficient between innovation programs and organizational culture was 0.332, indicating a good association. A supportive organizational culture may greatly enhance the effectiveness of innovation initiatives by fostering cooperation and creativity among students and professors. Ahmad, Butt, Chen, and Liu (2023) supports this claim by arguing that organizational culture plays a crucial role in shaping attitudes and actions toward innovation, ultimately impacting the overall results of innovation in institutions. There is a strong and positive relationship between innovation programs and university-industry collaboration strategies, with a coefficient of 0.386. This finding indicates that the effectiveness of innovation projects is strongly linked to their successful engagement with industry partners. These collaborations provide institutions with additional resources, specialized knowledge, and practical applications, thereby improving their ability to innovate. Perkmann, Salandra, Tartari, McKelvey, and Hughes (2021) highlight the significance of collaborations between universities and industries in converting academic research into tangible inventions, thereby enabling the development of strong innovation initiatives.

The correlation coefficient between government funding and Organizational culture is 0.541, indicating a strong and favorable association. These findings suggest that a more supportive and positive corporate culture is linked to increased government financing. Celtekligil (2020) emphasized the importance of having sufficient resources to shape organizational culture and effectiveness. They concluded that sufficient financing may create an atmosphere that values and promotes creativity and cooperation. The association between innovation programs and university size is somewhat favorable, with a value of 0.271. Larger institutions tend to have a greater abundance of resources, staff, and students, which may contribute to broader and more successful innovation activities. This aligns with Sułkowski and Patora-Wysocka (2020), who found that larger institutions often take advantage of economies of scale to commit more resources to research and innovation.

Funding Levels show a minimal adverse connection with most variables, including a coefficient of -0.055 with innovation programs. This suggests that the impact of funding level on the effectiveness of innovation projects within the institutions being studied is minimal. This implies that variables such as the strategic allocation of funding, the existence of supporting organizational cultures, and collaborative tactics may have a greater impact on promoting innovation. Ávila (2022) emphasizes the importance of absorptive capacity in determining the success of innovation activities. Absorptive capacity refers to an organization's ability to identify, integrate, and execute new information. This may explain the weak association observed in the present study.

Table 4 Regression Results on Organizational Culture, Government Funding and Innovation Programs

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
Model	β	Std. Err.	Beta		
Constant	0.013	0.003		3.888	0.000
OC	0.278	0.059	0.440	4.678	0.000
UIC	1.062	0.060	0.977	17.706	0.000
GF	0.394	0.047	0.394	8.479	0.000
OC×GF	0.106	0.033	0.106	3.168	0.002
UIC×GF	0.427	0.050	0.427	8.628	0.000
USize	-0.204	0.054	-0.204	-3.753	0.000
FL	0.233	0.039	0.233	5.961	0.000
R^2	0.92				
Adjusted R^2	0.81				
F-Statistics	8.678				

P-value	0.000				
Durbin-Watson	1.591				

Note: IP: Innovation Programs, GF: Government, Funding, OC: Organizational Culture, UIC: University-Industry Collaboration Strategies, USize: University Size, FL: Funding Levels

Source: Field Data (2024)

The regression analysis in Table 4 examines the impact of university-industry cooperation strategies (UIC), government financing (GF), and organizational culture (OC) on innovation programs (IP) in public institutions in Indonesia. The results offer valuable insights into the interplay between and influence of these variables on the success of innovation initiatives. An unstandardized coefficient (β) of 0.278 and a t-value of 4.678 ($p < 0.000$) indicate that innovation programs have a significant positive impact on innovation culture (OC). This implies that innovation initiatives are significantly enhanced by a conducive organizational culture. This discovery is following the research conducted by Zhu and Engels (2014), who demonstrated that favorable organizational cultures foster an environment conducive to cooperation and creativity by encouraging instructors and students to adopt new methods. Akanji, Mordi, Ituma, Adisa, and Ajonbadi (2020) emphasize the significance of a strong organizational culture in shaping employees' perspectives regarding innovation, thereby improving an organization's overall innovation performance.

Innovation programs are significantly and advantageously affected by university-industry collaboration (UIC), which is a collaboration between universities and industries. The evidence for this is a t-value of 17.706 and a β of 1.062 ($p < 0.000$). This underscores the critical significance of forging productive partnerships with industrial partners to facilitate effective innovation initiatives. These relationships enable universities to access additional resources, specialized knowledge, and real-world applications, thereby enhancing their capacity to innovate. Bellini et al. (2019) have underscored the importance of strategic alignment and trust in university-industry collaboration to foster innovation. Additionally, Perkmann et al. (2021) underscored that these relationships that facilitate the exchange of information and technology, which are essential for generating novel results.

A β of 0.394 and a t-value of 8.479 ($p < 0.000$) demonstrate that government financing (GF) has a significant positive impact on innovation programs. This finding underscores the critical importance of government financial support for enabling institutions to conduct innovative research. Hansen et al. (2019) demonstrated that government assistance cultivates a policy framework that encourages and sustains innovative endeavors, demonstrating the importance of adequate funding in providing the requisite resources for research and development. Furthermore, Rosenberg (2000) underscores the necessity of ongoing government support to sustain long-term R&D endeavors that are essential for significant progress.

The β of 0.106 and t-value of 3.168 ($p < 0.002$) indicate that the interaction term between government finance and organizational culture (OC×GF) significantly and positively influences innovation programs. This implies that organizational culture has a greater impact on innovation programs when there is substantial government support. The UIC×GF interaction term has a significant positive impact, with a β coefficient of 0.427 and a t-value of 8.628 ($p < 0.000$).

The interaction effects underscore the beneficial results of combining effective cooperation tactics, supportive organizational cultures, and adequate government funding, which collectively enhance the efficacy of innovation programs. Ahmad et al. (2023) substantiate this assertion by examining the Triple Helix model, which underscores the critical role of university-industry-government relationships in the promotion of innovation in a knowledge-based society.

Innovation programs are adversely affected by the magnitude of the university (USize), as evidenced by a β coefficient of -0.204 and a t-value of -3.753 ($p < 0.000$). This finding suggests that the superior innovation outcomes achieved by a university are not always a direct consequence of its larger scale. This may be due to bureaucratic intricacies or challenges in resource allocation faced by larger institutions. This is consistent with the findings of Sułkowski and Patora-Wysocka (2020), those who noted that, although larger institutions have greater resources, they also encounter more substantial administrative challenges. Ávila (2022) suggests that large organizations may encounter challenges in terms of agility and reactivity, both of which are essential for the development of an innovative environment.

The study discovered a positive correlation between funding levels (FL) and innovation initiatives, with a β coefficient of 0.233 and a t-value of 5.961 ($p < 0.000$). This finding implies that innovation programs are significantly more effective when they receive higher levels of funding. However, the magnitude of the effect is comparatively lower than the direct impact of government support, university-industry

cooperation, and organizational culture. This suggests that the utilization of finance, as well as pre-existing cultural and collaborative structures, is equally important. Celtekligil (2020) contends that an organization's absorptive capacity, defined as its capacity to identify, assimilate, and utilize new information, is essential for the effective allocation of funds for innovation.

The model offers a compelling explanation of the factors that influence innovation outcomes in the universities under investigation. The R-squared (R^2) value of 0.92 and the adjusted R-squared value of 0.81 suggest that it is responsible for a significant portion of the variability in innovation programs. This implies that the variables and their interactions are dependable explanations for the innovation results. The F-statistic of 8.678 ($p < 0.000$) further supports the general relevance of the model. The high R^2 value suggests that the most significant factors influencing the efficacy of innovation programs at universities are organizational culture, university-industry partnership methods, government financing, and the interaction between these factors.

The regression analysis underscores the substantial influence of government financing, university-industry partnership methods, and organizational culture on the enhancement of innovation programs in universities. The findings suggest that academic institutions must develop a nurturing organizational culture, establish effective collaboration strategies with industry partners, and secure adequate government funding to foster innovation. Empirical data and current research support these conclusions, which provide a comprehensive understanding of the variables that influence innovation outcomes at public institutions

CONCLUSION

Organizational culture, university-industry partnership strategies, and government funding significantly influence the effectiveness of innovation programs at Indonesian public institutions, according to the findings of this investigation. The advantageous impact of organizational culture on innovation initiatives underscores the importance of fostering an environment that encourages collaboration and innovation. Efficient methods for collaboration between universities and industries are crucial, as they provide access to supplementary resources, knowledge, and actual implementation, thereby enhancing the capacity for innovation. The impact of organizational culture and collaborative techniques is not only enhanced by the provision of the necessary financial resources for research and development but also by the availability of sufficient government financing. The interaction effects indicate that the combined influence of these variables is more significant than their impacts. This comprehensive understanding underscores the necessity for institutions to establish supportive organizational cultures, establish robust collaboration strategies with business partners, and secure an adequate amount of government funding to encourage innovation. Despite the significant impact of organizational culture and university-industry to improve innovation programs in universities, this study signifies limitations of the study that can enhance future research. Other variables, such as transformational leadership, academic capability, and collaboration strategy may potentially influence innovation outcomes in various contexts and countries. Another limitation of the study is that it focuses solely on public universities as samples. Future research may consider private universities as samples as they have different characteristics compared to public universities. Thus, the findings are expected to add value to the present literature.

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