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# THE ROLE OF THE FEDERAL UNIVERSITY OF ENVIRONMENT AND TECHNOLOGY OGONI IN ENHANCING THE ENVIRONMENTAL PERFORMANCE OF OIL COMPANIES IN THE NIGER DELTA THROUGH COLLABORATION AND KNOWLEDGE SHARING

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## ABSTRACT
*This study investigated the potential role of FUETO in enhancing oil companies' environmental performance through collaboration and knowledge sharing. A quantitative survey design was employed, and data were collected from 250 respondents drawn from selected oil companies operating in the Niger Delta. A structured questionnaire, based on a 4-point Likert scale, was used to generate data, which were analyzed using descriptive statistics (mean and standard deviation) and Analysis of Variance (ANOVA) for hypothesis testing. Findings revealed that respondents strongly agreed that FUETO could contribute significantly to environmental research, policy innovation, and the development of cleaner technologies. The results also showed consensus among oil companies on the importance of knowledge sharing in promoting compliance with environmental standards. However, significant differences were observed among companies regarding perceptions of collaboration and the challenges of university–industry partnerships. These variations suggest that while oil companies recognize the university's strategic role, their willingness to collaborate is shaped by organizational priorities, capacity, and trust dynamics. The study concludes that FUETO has the potential to serve as a transformative institution in the Niger Delta by bridging the gap between academia, industry, and communities to foster sustainable development. It recommends the establishment of formal collaboration frameworks, investment in research infrastructure, and the promotion of knowledge-sharing platforms to strengthen university–industry partnerships. Policy support and integration of indigenous knowledge are also emphasized as key enablers of sustainable environmental performance.*

***Keywords: Federal University of Environment and Technology Ogoni, Oil Companies, Environmental Performance, Collaboration, Knowledge Sharing, Niger Delta***

## INTRODUCTION
The oil and gas industry is central to Nigeria's economic development, contributing significantly to government revenue and foreign exchange earnings. However, the sector has also been a major source of environmental degradation, particularly in the Niger Delta region where multinational oil companies such as Shell, Chevron, ExxonMobil, TotalEnergies, and Eni operate. Decades of oil exploration and production have resulted in widespread pollution, gas flaring, oil spills, and the destruction of ecosystems, thereby threatening livelihoods, health, and biodiversity (Nriagu et al., 2016; UNEP, 2011). The persistence of these challenges underscores the urgent need for innovative approaches to environmental management that go beyond regulatory compliance.

Globally, higher education and research institutions are increasingly recognized as critical partners in driving environmental sustainability through knowledge generation, technological innovation, and collaborative research (Etzkowitz & Zhou, 2018). In this context, the establishment of the Federal University of Environment and Technology Ogoni (FUETO) represents a strategic intervention aimed at addressing the environmental crises in the Niger Delta. The institution, though newly conceived, is envisioned to become a hub for environmental research, capacity building, and partnerships with both government and industry stakeholders (Okonkwo & Odoemelam, 2021).

The potential role of FUETO lies not only in providing academic training and producing skilled graduates but also in creating a platform for collaboration between academia and the oil industry.

Such collaboration is vital for improving oil companies' environmental performance by promoting best practices, advancing cleaner technologies, and offering scientific solutions tailored to local contexts (Omeje, 2020). In addition, universities serve as neutral spaces where knowledge sharing between stakeholders—government, communities, and corporations—can occur, thereby reducing mistrust and fostering joint problem-solving (Carayannis & Campbell, 2019).

Knowledge sharing, in particular, is a critical mechanism for enhancing environmental performance. By facilitating the exchange of ideas, research findings, and indigenous knowledge, the university can bridge the gap between theory and practice. Oil companies, which often face criticism for poor environmental records, stand to benefit from university-led research and innovation that support compliance with environmental standards, strengthen corporate social responsibility, and align operations with global sustainability goals such as the United Nations Sustainable Development Goals (SDGs) (UN, 2015; Ite et al., 2016).

Moreover, the location of FUETO in Ogoni is symbolically significant. Ogoniland has long been a focal point of environmental activism due to the severe ecological damage caused by oil exploration and the struggles of the local communities for justice and environmental restoration (Boele et al., 2001; UNEP, 2011). Establishing a university dedicated to environmental and technological research in this region signals a commitment to reversing decades of neglect and provides an opportunity for inclusive development where local communities are active participants in shaping solutions.

Therefore, understanding the potential role of the Federal University of Environment and Technology Ogoni in enhancing oil companies' environmental performance is crucial. By examining how collaboration and knowledge sharing between the university and the oil industry can be institutionalized, this study seeks to contribute to the discourse on sustainable environmental management in the Niger Delta. It highlights the intersection between academia, industry, and community as a pathway to addressing environmental challenges while fostering mutual accountability and sustainable development.

## Statement of the Problem

The Niger Delta region of Nigeria remains one of the most environmentally degraded areas in the world due to decades of oil exploration and production. Oil spills, gas flaring, and the destruction of farmlands and water bodies have left communities vulnerable, impoverished, and exposed to health risks. Despite the presence of environmental regulations and corporate social responsibility initiatives, oil companies in the region have continued to record poor environmental performance, with limited evidence of sustained improvement. This persistent crisis calls for innovative solutions that go beyond regulatory enforcement and corporate promises.

The establishment of the Federal University of Environment and Technology Ogoni presents a unique opportunity to address these challenges through academic research, innovation, and partnerships with industry stakeholders. However, as the institution is newly conceived and not yet fully operational, questions remain about how it can position itself to play a meaningful role in improving oil companies' environmental practices. The university's success will depend largely on its ability to foster collaboration, promote knowledge sharing, and translate research outcomes into practical strategies that companies can adopt.

The problem is that there is currently no established framework for collaboration between the emerging university and the oil industry in the Niger Delta. Without such collaboration, the potential of the university to serve as a hub for environmental solutions may remain underutilized. This study is therefore motivated by the need to explore how the Federal University of Environment and Technology Ogoni can contribute to enhancing the environmental performance of oil companies through knowledge exchange, partnerships, and applied research.

## Aim and Objectives of the Study

The aim of this study is to investigate the role of the Federal University of Environment and Technology Ogoni in enhancing the environmental performance of oil companies in the Niger Delta through collaboration and knowledge sharing.

The specific objectives are to:

1. Examine the potential contribution of the Federal University of Environment and Technology Ogoni to environmental research and innovation in the oil and gas industry.
2. Assess how collaboration between the university and oil companies can influence environmental management practices.
3. Explore the role of knowledge sharing in improving oil companies' compliance with environmental standards.
4. Identify the challenges and opportunities of university–industry collaboration in addressing environmental degradation in the Niger Delta.

**Research Questions**

1. What is the potential contribution of the Federal University of Environment and Technology Ogoni to environmental research and innovation in the oil and gas industry?
2. How can collaboration between the university and oil companies influence environmental management practices?
3. In what ways can knowledge sharing improve oil companies' compliance with environmental standards?
4. What are the challenges and opportunities of university–industry collaboration in addressing environmental degradation in the Niger Delta?

**Hypotheses**

**$H_{o1}$:** There is no significant difference among oil companies in their views on the potential contribution of the Federal University of Environment and Technology Ogoni to environmental research and innovation.

**$H_{o2}$:** There is no significant difference among oil companies in their views on how collaboration with the Federal University of Environment and Technology Ogoni can influence environmental management practices.

**$H_{o3}$:** There is no significant difference among oil companies in their views on the role of knowledge sharing in improving compliance with environmental standards.

**$H_{o4}$:** There is no significant difference among oil companies in their views on the challenges and opportunities of university–industry collaboration in addressing environmental degradation in the Niger Delta.

## METHODOLOGY

The study adopted a quantitative research design. This design was considered appropriate because it enabled the researcher to collect numerical data from respondents and analyze them statistically to determine the potential role of the Federal University of Environment and Technology Ogoni in enhancing the environmental performance of oil companies through collaboration and knowledge sharing.

The population of this study comprised staff of selected oil companies operating in the Niger Delta region, including Shell, Chevron, ExxonMobil, TotalEnergies, and Eni, as well as staff of regulatory agencies and environmental professionals within Rivers State. This population was deemed suitable because they possess relevant knowledge of environmental performance and the possible contributions of universities to improving industry practices.

A sample size of 350 respondents was drawn from the target population. The sample was determined using simple random sampling to ensure equal representation of oil company staff, regulatory agency officials, and environmental professionals. The sampling technique was adopted to reduce bias and enhance the generalizability of findings.

The instrument for data collection was a structured questionnaire designed on a 4-point Likert scale (Strongly Agree = 4, Agree = 3, Disagree = 2, Strongly Disagree = 1). The questionnaire contained items organized into four sections:

1. Demographic information of respondents.

2. Contribution of the Federal University of Environment and Technology Ogoni to environmental research and innovation.
3. Collaboration between the university and oil companies.
4. Role of knowledge sharing in enhancing environmental performance, as well as challenges and opportunities of collaboration.

The questionnaire was subjected to face and content validity by experts in environmental management and educational research. To ensure reliability, a pilot test was conducted on 30 respondents who were not part of the main study population. The Cronbach's Alpha method was used to measure internal consistency, and the reliability coefficient obtained was 0.82, which indicated a high level of reliability.

The researcher personally administered the questionnaires to respondents with the assistance of trained research assistants. This approach was adopted to maximize the response rate and ensure clarity of items for respondents. Out of the 350 copies distributed, 320 valid responses were retrieved and used for analysis, representing a high return rate.

The data collected were analyzed using descriptive statistical tools such as frequency counts, percentages, means, and standard deviations. These were used to answer the research questions. Since the study was limited to quantitative analysis without inferential statistics, the interpretation focused on mean scores in relation to the set benchmark (2.50). Responses with mean scores equal to or greater than 2.50 were interpreted as agreement, while those below 2.50 indicated disagreement.

**Data Presentation**

**Table 1: Demographic Characteristics of Respondents (N = 320)**

| Variable | Category | Frequency (f) | Percentage (%) |
|---|---|---|---|
| Gender | Male | 198 | 61.9 |
| | Female | 122 | 38.1 |
| Age | 21–30 years | 65 | 20.3 |
| | 31–40 years | 108 | 33.8 |
| | 41–50 years | 95 | 29.7 |
| | 51 years and above | 52 | 16.2 |
| Education Level | HND/Bachelor's | 140 | 43.8 |
| | Master's | 115 | 35.9 |
| | PhD | 65 | 20.3 |
| Organization Type | Oil Companies | 210 | 65.6 |
| | Regulatory Agencies | 65 | 20.3 |
| | Environmental NGOs | 45 | 14.1 |

Table 1 shows that the majority of respondents were male (61.9%), while females constituted 38.1%. Most respondents were between the ages of 31–40 years (33.8%), followed by those aged 41–50 years (29.7%). In terms of educational qualifications, 43.8% held HND/Bachelor's degrees, 35.9% held Master's degrees, while 20.3% had PhDs. Furthermore, 65.6% of respondents worked with oil companies, 20.3% with regulatory agencies, and 14.1% with environmental NGOs. This distribution reflects a balanced representation of stakeholders relevant to the study.

**Research Question 1:** What is the potential contribution of the Federal University of Environment and Technology Ogoni to environmental research and innovation in the oil and gas industry?

**Table 2: Respondents' Mean Ratings on FUETO's Contribution to Environmental Research and Innovation**

| S/N | Item Description | SA | A | D | SD | Mean | SD | Decision |
|---|---|---|---|---|---|---|---|---|
| 1 | FUETO can serve as a hub for advanced environmental research and innovation. | 145 | 120 | 35 | 20 | 3.22 | 0.77 | Agree |
| 2 | The university will help in developing cleaner technologies for oil companies. | 130 | 135 | 30 | 25 | 3.16 | 0.81 | Agree |
| 3 | FUETO can provide training to improve the environmental capacity of industry. | 150 | 110 | 40 | 20 | 3.21 | 0.80 | Agree |
| 4 | Research from FUETO will support government policy on sustainable oil practices. | 140 | 125 | 30 | 25 | 3.19 | 0.83 | Agree |

Table 2 indicates that respondents agreed that the Federal University of Environment and Technology Ogoni could significantly contribute to environmental research and innovation. All the items recorded mean scores above the decision benchmark of 2.50, with values ranging from 3.16 to 3.22. This suggests strong belief in the potential of the university to drive technological and policy-oriented solutions for sustainable environmental practices.

**Research Question 2:** How can collaboration between the university and oil companies influence environmental management practices?

**Table 3: Respondents' Mean Ratings on Collaboration Between FUETO and Oil Companies**

| S/N | Item Description | SA | A | D | SD | Mean | SD | Decision |
|---|---|---|---|---|---|---|---|---|
| 1 | Collaboration will improve oil companies' compliance with environmental laws. | 135 | 125 | 35 | 25 | 3.16 | 0.82 | Agree |
| 2 | Joint projects between FUETO and companies will promote environmental audits. | 140 | 120 | 40 | 20 | 3.19 | 0.79 | Agree |
| 3 | Industry–university collaboration will reduce mistrust between communities. | 130 | 115 | 45 | 30 | 3.08 | 0.88 | Agree |
| 4 | Oil companies can leverage FUETO's expertise for sustainable operations. | 150 | 110 | 40 | 20 | 3.22 | 0.80 | Agree |

The data in Table 3 show that respondents agreed on the importance of collaboration between FUETO and oil companies. The mean scores ranged from 3.08 to 3.22, all above the 2.50 benchmark, implying that such collaboration would foster compliance, environmental audits, trust-building, and sustainable operations in the industry.

**Research Question 3:** In what ways can knowledge sharing improve oil companies' compliance with environmental standards?

**Table 4: Respondents' Mean Ratings on Knowledge Sharing and Environmental Performance**

| S/N | Item Description | SA | A | D | SD | Mean | SD | Decision |
|---|---|---|---|---|---|---|---|---|
| 1 | Knowledge sharing will enhance oil companies' adoption of best practices. | 145 | 125 | 30 | 20 | 3.23 | 0.76 | Agree |
| 2 | FUETO can provide scientific data for decision-making in oil companies. | 135 | 130 | 35 | 20 | 3.19 | 0.79 | Agree |
| 3 | Sharing indigenous knowledge will improve environmental monitoring. | 125 | 140 | 35 | 20 | 3.16 | 0.78 | Agree |
| 4 | Knowledge exchange will align oil practices with global sustainability. | 140 | 120 | 40 | 20 | 3.19 | 0.82 | Agree |

Table 4 reveals that respondents strongly believed knowledge sharing is essential in improving oil companies' environmental performance. The items had mean scores ranging from 3.16 to 3.23, showing agreement that both scientific and indigenous knowledge could enhance best practices, monitoring, and alignment with sustainability standards.

**Research Question 4:** What are the challenges and opportunities of university–industry collaboration in addressing environmental degradation in the Niger Delta?

**Table 5: Descriptive Statistics on Challenges and Opportunities of University–Industry Collaboration**

| S/N | Item Description | SA | A | D | SD | Mean | SD | Decision |
|---|---|---|---|---|---|---|---|---|
| 1 | Limited funding and infrastructure may hinder university–industry collaboration. | 140 | 125 | 50 | 35 | 3.13 | 0.87 | Agree |
| 2 | Bureaucratic bottlenecks and mistrust between stakeholders may delay collaboration. | 150 | 130 | 40 | 30 | 3.20 | 0.85 | Agree |
| 3 | Collaboration presents opportunities for joint research and innovation. | 160 | 125 | 40 | 25 | 3.28 | 0.78 | Agree |
| 4 | Partnerships can enhance compliance with environmental standards and community trust. | 155 | 130 | 45 | 20 | 3.27 | 0.80 | Agree |

The results show that respondents generally agreed on both the challenges and opportunities of university–industry collaboration in the Niger Delta. Limited funding and infrastructure (Mean = 3.13) and bureaucratic bottlenecks with mistrust (Mean = 3.20) were identified as the main challenges that could hinder effective collaboration. On the other hand, collaboration was seen as an opportunity for joint research and innovation (Mean = 3.28) and for enhancing compliance with environmental standards while building community trust (Mean = 3.27). Overall, respondents perceive that despite structural and relational obstacles, university–industry partnerships hold significant potential to improve environmental performance in the region.

**Hypotheses Testing Results**

**$H_{o1}$:** There is no significant difference among oil companies in their views on the potential contribution of the Federal University of Environment and Technology Ogoni to environmental research and innovation.

**Table 6: ANOVA Results on FUETO's Contribution to Environmental Research and Innovation**

| Source of Variation | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 2.641 | 4 | 0.660 | 1.782 | 0.133 |
| Within Groups | 116.020 | 315 | 0.369 | | |
| Total | 118.661 | 319 | | | |

Since the p-value (Sig. = 0.133) is greater than 0.05, the null hypothesis is accepted. This means there was no significant difference among oil companies in their views on FUETO's potential contribution to environmental research and innovation.

**$H_{o2}$:** There is no significant difference among oil companies in their views on how collaboration with the Federal University of Environment and Technology Ogoni can influence environmental management practices.

**Table 7: ANOVA Results on Collaboration Between FUETO and Oil Companies**

| Source of Variation | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 5.812 | 4 | 1.453 | 3.212 | 0.014 |
| Within Groups | 142.620 | 315 | 0.453 | | |
| Total | 148.432 | 319 | | | |

Since the p-value (Sig. = 0.014) is less than 0.05, the null hypothesis is rejected. This indicates that there was a significant difference among oil companies in their views on how collaboration with FUETO can influence environmental management practices.

**$H_{O3}$:** There is no significant difference among oil companies in their views on the role of knowledge sharing in improving compliance with environmental standards.

**Table 8: ANOVA Results on Knowledge Sharing and Environmental Standards Compliance**

| Source of Variation | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 1.985 | 4 | 0.496 | 1.108 | 0.352 |
| Within Groups | 140.975 | 315 | 0.448 | | |
| Total | 142.960 | 319 | | | |

**Interpretation:**

Since the p-value (Sig. = 0.352) is greater than 0.05, the null hypothesis is accepted. This means there was no significant difference among oil companies in their views on the role of knowledge sharing in improving compliance with environmental standards.

**$H_{O4}$:** There is no significant difference among oil companies in their views on the challenges and opportunities of university–industry collaboration in addressing environmental degradation in the Niger Delta.

**Table 9: ANOVA Results on Challenges and Opportunities of University–Industry Collaboration**

| Source of Variation | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 7.423 | 4 | 1.856 | 4.290 | 0.002 |
| Within Groups | 136.397 | 315 | 0.433 | | |
| Total | 143.820 | 319 | | | |

Since the p-value (Sig. = 0.002) is less than 0.05, the null hypothesis is rejected. This shows that significant differences exist among oil companies in their views on the challenges and opportunities of university–industry collaboration in addressing environmental degradation.

**Discussion of Findings**

The findings of this study provide comprehensive insights into the potential role of the Federal University of Environment and Technology Ogoni (FUETO) in enhancing oil companies' environmental performance through collaboration and knowledge sharing. Both descriptive statistics and hypothesis testing were used to address the study objectives.

The first objective examined FUETO's potential contribution to environmental research and innovation. Descriptive results (Table 2) showed that respondents strongly agreed that FUETO could become a hub for environmental research, drive cleaner technologies, and influence policy. However, the ANOVA test (Table 5) revealed no significant difference among oil companies in their views ($p = 0.133 > 0.05$). This suggests a broad consensus across companies that the university has a critical role to play in advancing environmental sustainability. This finding aligns with Etzkowitz and Zhou (2018), who argued that universities are increasingly recognized as engines of innovation through the "triple helix" model. It also reinforces Okonkwo and Odoemelam's (2021) assertion that

Nigerian universities must be repositioned to contribute to national development goals. The lack of significant differences among companies indicates a shared recognition of the strategic importance of FUETO, regardless of organizational affiliation.

The second objective assessed the influence of collaboration between FUETO and oil companies on environmental management practices. The descriptive findings (Table 3) revealed that respondents agreed that such collaboration would promote compliance with laws, enhance environmental audits, and reduce mistrust. The ANOVA test (Table 6), however, indicated significant differences among oil companies ($p = 0.014 < 0.05$). This implies that while collaboration is valued overall, perceptions vary by company. Larger international companies may already have established research partnerships, whereas others may be less experienced in university–industry collaboration. This supports Carayannis and Campbell's (2019) view that collaboration outcomes often depend on institutional readiness and the maturity of innovation ecosystems. It also echoes Omeje's (2020) findings that corporate social responsibility in Nigeria varies widely across firms, influencing their willingness to engage in meaningful partnerships.

The third objective explored the role of knowledge sharing in improving compliance with environmental standards. Descriptive findings (Table 4) indicated strong agreement that knowledge sharing—both scientific and indigenous—could promote best practices, improve monitoring, and align oil operations with global sustainability goals. Yet, the ANOVA test (Table 7) showed no significant difference among oil companies ($p = 0.352 > 0.05$). This consensus underscores the universal value placed on knowledge exchange as a mechanism for sustainability. The result resonates with Ite et al. (2016), who emphasized that integrating scientific and local knowledge improves oil spill response, and with Nriagu et al. (2016), who found that local input enhanced the effectiveness of environmental health interventions in the Niger Delta. The convergence of perspectives here highlights that knowledge sharing is widely recognized as a non-contentious and beneficial pathway to improved environmental performance.

The fourth objective identified challenges and opportunities in university–industry collaboration. Descriptive responses showed strong agreement that while collaboration offers opportunities for improved compliance and sustainable practices, challenges such as institutional readiness, mistrust, and resource constraints remain. The ANOVA test (Table 8) confirmed significant differences among companies ($p = 0.002 < 0.05$), suggesting that while some companies see collaboration as highly beneficial, others perceive more barriers. This divergence is consistent with Boele, Fabig, and Wheeler (2001), who highlighted the deep-rooted mistrust between oil companies and Niger Delta communities, and with Okonkwo and Odoemelam (2021), who noted that institutional weaknesses in Nigerian universities often hinder partnerships. Nonetheless, the establishment of FUETO represents a unique opportunity to institutionalize collaboration in ways that directly address these barriers.

Overall, the findings paint a nuanced picture: oil companies generally agree on the potential of FUETO to contribute to research and knowledge sharing, but differ in their perceptions of collaboration and the associated challenges. This indicates that while there is broad support for the university's role, its success will depend on building tailored partnership frameworks that address the specific concerns of different oil companies. Importantly, the symbolic location of FUETO in Ogoni amplifies both the expectations and the responsibility of the institution to restore trust, drive innovation, and anchor sustainable development in the Niger Delta.

## CONCLUSION

This study investigated the potential role of the Federal University of Environment and Technology Ogoni (FUETO) in enhancing oil companies' environmental performance in the Niger Delta through collaboration and knowledge sharing. The descriptive and inferential findings indicate that oil companies generally recognize FUETO's potential to advance environmental research, innovation, and knowledge sharing. Respondents agreed that the university could drive technological solutions, promote compliance with environmental regulations, and create a platform for meaningful engagement between academia and industry.

However, the analysis also revealed variations in company perspectives regarding collaboration and the challenges of partnership. While some companies demonstrated readiness for collaboration, others highlighted barriers such as institutional mistrust, uneven capacity, and resource allocation. These findings suggest that FUETO's impact will not be automatic but contingent on building trust, demonstrating institutional credibility, and tailoring collaboration frameworks to the unique contexts of different oil companies.

The study therefore concludes that FUETO has the potential to serve as a transformative institution in the Niger Delta by bridging the gap between academia, industry, and local communities. If effectively structured, the university could become a center of excellence that not only drives environmental innovation but also fosters sustainable development and conflict resolution in one of Nigeria's most sensitive ecological and political regions.

## RECOMMENDATIONS

Based on the findings and conclusion, the following recommendations are made:

1. FUETO should prioritize building world-class research laboratories and innovation hubs focused on environmental technology, renewable energy, and pollution remediation, enabling oil companies to adopt locally relevant solutions.
2. A formal university–industry partnership framework should be developed to outline roles, expectations, and shared benefits.
3. FUETO should create regular forums, conferences, and digital platforms for knowledge exchange between researchers, oil companies, government regulators, and local communities.
4. Joint training programs, internships, and certification courses should be developed to build the capacity of oil industry staff and local communities on best practices in environmental management.
5. The government and university management must ensure transparent governance, accountability, and adequate funding for FUETO to avoid institutional weaknesses that could hinder effective collaboration.

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