

Evaluating the Impact of Data Governance and Technological Innovations

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Abstract: This paper examines how data governance models and technological advances can help to realize SDG 16: peace, justice, and strong institutions. SDG 16 is the importance of having transparent, accountable, and effective governance structures to enhance peace and justice in the world. With digital transformation redefining the government models, the role of data governance, as well as technology available to facilitate it, like blockchain, AI, big data, and others, should be known in the development of SDG 16. This study is written using a mixed-method approach and unites quantitative data governance maturity and SDG 16 performance indicators analysis, and a qualitative case study, which investigates the effect of technological innovations on improved governance outcomes. The research concludes that data governance maturity is related to SDG 16 outcomes firmly, especially in such areas as transparency, accountability, and institutional trust. Such technologies as AI and blockchain are depicted to improve the delivery of services, raise efficiency, and increase people's confidence in institutions, which contributes to the SDG 16 goals. Nevertheless, the paper also mentions that the effects of data governance frameworks are also immensely significant, especially in the less-developed areas, whereas technological developments have greater returns in the regions with developed digital infrastructure. The results indicate that sound data governance systems are essential in enhancing the SDG 16 results, and the enhancement of these systems is a highlight in the development of technology adoption, particularly in developing sectors. In the future, a study would be done to incorporate data governance and technological advancements into holistic governing frameworks and to examine how situational variables affect their effectiveness in facilitating robust institutions around the world.

Keywords: Data Governance; Technological Innovation; SDG 16; Institutional Transparency; Digital Governance; Accountability Systems; Sustainable Development.

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I. Introduction

SDG 16, which focuses on peace, justice, and the establishment of effective institutions, takes centre stage in the overall 2030 Agenda on Sustainable Development. Its goals are enhancing decision-making processes that are inclusive, participatory, accountable, constructive, and transparent institutions, and access to justice for all. The success of SDG 16 is bound to happen because peaceful and inclusive societies are the gateway to the achievement of other Sustainable Development Goals (SDGs). Without good institutions, good governance, and social equity, achieving key sustainable development targets, such as poverty reduction, environmental sustainability, and economic growth, becomes significantly more difficult. SDG 16, therefore, takes the centre stage in ensuring the international community fulfils its guarantee to the human right, rule of law, and inclusiveness in the global undertaking of being sustainable. Nonetheless, SDG 16 has gained very universal acceptance; the achievement of the targets has not been easy. The lack of transparency, inaccessibility to justice and wrong, corruption, and poor governance systems are some of the more significant challenges the countries have been grappling with. In particular, the control over information, misinformation, and inadequate legal frameworks of technological integration are some of the new challenges that are hampering progress. Furthermore, a significant challenge is the lack of robust mechanisms to measure and track progress toward SDG 16 targets, which contributes to a lack of accountability and slow institutional change. In addition, the issue of quantifiable progress in regard to such a goal grows as the complexity of the governance issues, particularly in weak and conflict-prone states. It is now time to find innovative solutions that would result in institutional effectiveness, good governance,

and introduce peace and justice within the dynamic international environment that operates in, by the year 2030.

In terms of these obstacles, data governance and technological innovations are very instrumental in addressing the impediments to SDG 16. Furthermore, there are several challenges associated with implementing Data Governance Frameworks and Tech Innovations within institutions. These are the solutions to the problems related to Data Privacy; Lack of Technology Readiness; and Digital Divides. Data Privacy issue, in its turn, raises the most significant concern in the AI and Blockchain sphere in terms of ethical and legal issues related to Data Collection, Data Storage, and Data Sharing. Also, technological preparedness, or the willingness of institutions to incorporate and use new technologies, can also be different in each region, and some institutions have difficulty in utilizing and expanding digital technologies. These issues have to be handled with a lot of care so that the technological innovations can be used to serve the governance objectives without affecting transparency and security. The SDG Journal is dedicated to studies that correspond to the Sustainable Development Goals (SDGs), and the main issues covered are the aspects of governance, social impacts, environmental sustainability, and technological achievements. In the context of providing SDG 16, whose aim is to improve peace, justice, and strong institutions (Danil et al., 2025), data governance systems and technological advances will prove relevant. The paper presented below discusses how technological solutions, such as blockchain, artificial intelligence (AI), and big data analytics, can help to promote transparency, accountability, and efficiency in institutions. These are some of the fundamental considerations in the realization of the objectives of SDG 16, which emphasizes on the importance of proper and open systems of governance. Through the lens of the synergy between data governance and technology, this paper will point out how the innovations may enhance the institutional processes and lead to improved governance, thereby helping to accomplish the goals of SDG 16.

The structure of the paper is as follows: Section I presents the significance of SDG 16 and how data governance and technological innovations fit in. Part II is a literature review on the current body of knowledge on the data governance framework and technological progress. In Section III, the theoretical framework between data governance maturity and technological readiness, and the SDG 16 outcomes is given. Section IV describes the methodology applied in the study, which is based on both qualitative and quantitative approaches. Section V includes the results, which demonstrate the association between governance and technological innovations and SDG 16 outcomes. Section VI is an analysis of the implications of the findings, including policy recommendations. Section VII presents the main conclusions and recommendations for future research of the study.

II. Literature Survey

The adoption of SDG 16 has received a lot of scholarly attention owing to its role in enhancing peace, justice, and effective institutions. Although such attention is paid, the targets of SDG 16 are not easily achieved, primarily due to issues such as corruption, political instability, and inefficient institutions. (Thabit et al., 2020) speak about the possibility of implementing SDGs, SDG 16 in particular, through the application of data governance frameworks, namely, COBIT 2019, which facilitates transparency and minimizes inefficiencies in governance (Thabit et al., 2020). On the same note, (Pauliukevičienė et al., 2025) point out the connection between SDG 16 and digital transformation and that strategic digital technologies are imperative to the development of the governance systems necessary to support justice and peace (Pauliukevičienė et al., 2025; Yanamala & Suryadevara, 2023). Nevertheless, one of the bottlenecks is institutional effectiveness, and more research is required to create scalable policy interventions, which are data-driven institutional reforms (Sujatha, 2024; Nwangele et al., 2021). Such new developments have also centered on regional issues. For instance, (Furtado et al., 2023) demonstrate how big data applications were deployed in Brazil to target various SDGs, including SDG 16, and how data-driven governance can enhance transparency and institutional accountability (Furtado et al., 2023; Usman et al., 2024). However,

SDG 16 will only be met after the expansion and more organized deployment of technologies in developed and developing countries.

Data governance has emerged as one of the pillars of monitoring the progress and providing transparency in the drive towards SDGs. Research has addressed the issue of ensuring accountability and transparency in institutions, which form the focal points of SDG 16, through data governance frameworks. As an example, (Aguboshim et al., 2019) examine on ICT-based data governance in Nigeria, which highlights the relevance of well-designed governance frameworks to maximize the quality and integrity of such data that is essential in realizing sustainable development (Aguboshim et al., 2019; Adepoju et al., 2023) continue with the elaboration of the data governance framework to minimize redundancy and improve the quality of data on a large scale, as governance is regarded as crucial to large-scale SDG programs (Fernandez et al., 2023; Yanamala & Suryadevara, 2023). These frameworks allow data to be handled safely and effectively to fulfill sustainable development projects (Adepoju et al., 2023). On the other hand, transparency has been a significant push for open data initiatives. (Bachmann et al., 2022) claim that data-driven technologies like big data analytics play an essential role in SDG 16 implementation in that they make the information available and thus allow a more effective government accountability (Bachmann et al., 2022). However, problems such as the digital divide and the issue of data privacy that might restrict good governance still exist. This is the reason why sound data governance is needed to safeguard the ethical use of data (Harfouche et al., 2024; Munagandla et al., 2024). Artificial intelligence (AI), blockchain, and big data are the technological advances that are becoming part of the SDG 16 achievement framework. In their article, (Pigola et al., 2021) discuss the contribution of AI-based digital technologies to the implementation of SDGs in such states as Brazil and Portugal, especially emphasizing the idea of AI usage in enhancing governance and accountability (Pigola et al., 2021). Likewise, (Vărzaru et al., 2024) prove that digital technologies, particularly those in the European Union, play a central role in the promotion and enhancement of governance systems and the introduction of data-driven decision-making (Vărzaru et al., 2024; Olawade et al., 2025).

Hassani et al., (2021) address the concept of the exploitation of big data and computerized thinking in the tracking and evaluation of the development of SDGs, namely, SDG 16, which consists of enhancing institutional performance (Hassani et al., 2021). The analytics of data can be critical in identifying patterns and trends of justice, peace, and corruption that can be utilized to improve governance (Yanamala & Suryadevara, 2023). The decentralized nature of blockchain technology is also investigated with the aim of ensuring greater transparency and fewer instances of corruption, especially in the system of government (Furtado et al., 2023).

The literature regarding Data Governance and Technological Innovations relating to SDG 16 has been significantly increasing within recent years; however, there are noticeable gaps within this body of research. The majority of articles, including those by (Nilashi et al., 2023), are generally theoretical by nature, since they fail to give any empirical data of how these technologies actually work on the actual effect of providing SDG 16 (Nilashi et al., 2023). To get a closer understanding of the actual implications of these technologies in various governance settings, case studies and field evaluations are necessary. Moreover, no research is conducted to combine data governance frameworks and technological innovations, which may provide a holistic perspective on how the two interact to enhance institutional governance (Harfouche et al., 2024; Harfouche et al., 2024). Also, a lot of the research is dedicated to technology as a one-size-fits-all solution without paying attention to the social, political, and cultural obstacles, which can influence the deployment of such tools. This gap indicates that further research on the context of the institutions and integration of policies (Sujatha, 2024) is more nuanced. Lastly, technologies such as blockchain and AI and their effects on governance, especially in third-world countries, cannot be assessed in the long run. The longitudinal studies should be conducted to determine the change of these technologies in the long run and how they can help transform the institution to meet SDG 16.

Literature on SDG 16, data governance, and technological innovations proposes that data governance frameworks and digital technologies should be used to influence institutional transparency, accountability,

and efficiency at a significant scale to meet SDG 16. Nevertheless, there is still little empirical evidence about the actual consequences of these frameworks and technologies, in particular, about their effectiveness and scalability in various world situations in the long term. The knowledge gaps referenced above indicate the need for a more comprehensive research approach that incorporates both Data Governance and Technological Innovations concerning SDG 16, with a focus on practical implementation, and an empirical investigation to determine how they will contribute to achieving SDG 16.

III. Theoretical Framework

This framework shows the role of data governance and technological advances in attaining SDG 16 of increasing accountability, institutional trust, and the efficiency of governance on the whole. The model is a reflection of the interplay between two key drivers, namely data governance frameworks and technological innovations. These two components contribute to SDG 16 outcomes through the enhancement of institutional setups, enhancing transparency, and making the monitoring and provision of justice more effective.

Data governance in this model is the process of managing data in a structured way such that it is of high quality, easy to understand, and secure. Sound data governance systems offer the basis of transparency in institutional processes and decision-making. These frameworks encourage accountability, which is a fundamental need when developing the trust of an institution because these structures ensure data is available, precise, and that other data is handled properly. Those institutions that use good quality and good governance data can more effectively meet their responsibilities, which, by extension, leads to increased trust in the institutions by the population, which is an essential factor towards meeting the SDG 16 peace and justice goals.

These governance systems can be upgraded with technological solutions, such as AI, blockchain, and big data, which allow them to monitor processes in real-time, have transaction transparency, and correctly process enormous amounts of data. Such innovations enable institutions to go ahead and identify and deal with the problem of governance, which may include corruption, inefficiency, or human rights abuses. As an example, the blockchain technology can assist in improving the visibility of government procurements, and corrupt activities will be more challenging to get away with. On the same note, AI can aid in keeping track of the judicial process to provide fairness and relieve criminal bias, which would result in more efficient and transparent courts. These technologies, when properly combined, give a system in which justice is more affordable, participation is improved, and human rights are fulfilled. The application of these technologies enhances the contribution of the governance of data through offering practical information that enhances organizational decision-making and promotes accountability.

Data governance and technological readiness combined are the factors that promote institutional change. The framework connects these aspects to the quantifiable aspects that relate to SDG 16, which include access to justice, inclusive decision-making, and the reduction of corruption. When the two constructs are combined, what emerges is a more accountable and inclusive as well as transparent institution, which eventually produces a peaceful society and a stronger institution.

These frameworks can be applied in different institutional contexts in a real-life application. For example:

- **Government Institutions:** This can be achieved through the enactment of strong data governance systems in governments with ineffective governance systems, which would enhance transparency and accountability, particularly in service delivery by the government. Specifically, blockchain-based open data projects can assist in preventing corruption within government procurement by making transactions more auditable.
- **Judicial Systems:** AI can be applied to case data, judicial prediction, and biases, and enhance the level of transparency and fairness in courts. This might come in especially handy in those areas where the courts are not well developed or the extent of corruption is significant.

- **Healthcare and Education:** With the use of technological innovations such as AI and big data, it is possible to track the performance of state services, such as health care and education, to ensure efficient resource distribution and the accessibility and transparency of the public services.

Three major concepts have also been integrated into the model:

1. **Data Governance Maturity**, the effectiveness of data management, and whether it can facilitate transparent and accountable practices of data governance.
2. **Technological Innovation Readiness** is a measure of the readiness of an institution to adopt and exploit emerging technologies in its governance.
3. **Indicators of SDG 16**, i.e., the specific targets to determine the progress towards peace, justice, and effective institutions, e.g., access to justice (16.3), responsive decision-making (16.7), and the protection of the freedoms of the population (16.10).

Having a relationship between these constructs, the framework shows the synergetical relationship between better data governance and higher technological preparedness to improve institutional efficiency, increase transparency, and finally achieve the SDG 16 goals. This model insists on the importance of establishing improved structures of good governance and the new technologies to establish improved institutions and more equitable societies worldwide.

IV. Methodology

The research paper is based on a mixed-method research design, combining the quantitative and qualitative methods of research to provide a holistic account of the role of data governance and technological innovations in meeting SDG 16. The quantitative section will include the investigation of the data governance maturity and SDG 16 performance indicators, which provide objective measures that can be applied to verify the primary hypotheses of the study. The data governance maturity will be measured with the help of a framework such as COBIT 2019 or the Data Governance Maturity Model by the OECD, which rates the quality of data management activities in institutions on a scale. Such variables as the clarity of the data management operations, the quality of the data used, and safety measures will be discussed. Regarding the SDG 16 performance indicators, the paper will consider the data on institutional transparency, accountability, and citizen participation, in particular, on such indicators as access to public information (16.10), citizen participation in the decision-making process (16.7), and openness of government services (16.6).

Conversely, the qualitative part is the case studies and interviews with the relevant stakeholders to find out the contextual and practical implementation of the technological advances like blockchain, AI, and big data in governance systems. The semi-structured interviews with the business executives and governance specialists with direct experience of the use of these technologies will be used to gather the qualitative data. The interviews will be conducted in the light of particular questions that will center on the integration of these technologies in the system of governance, the problems encountered, and the results of their application in SDG 16 outcomes. The interview data will be analyzed with the help of coding schemes that will help detect common themes and patterns, as well as the insight that may be developed based on the analysis of the interview data to develop a subtle understanding of the role technological innovations play in ensuring transparency, accountability, and efficiency. The qualitative and quantitative method facilitates a clear understanding of the elements that contribute to the institutional transparency, accountability, and efficiency as essential in the achievement of SDG 16.

This study will use a sample size of 50-100 individuals who are either actively engaged in data governance programs, technological advancements, or ethical governance platforms in different sectors to take part as primary data in the study. Those participants will be chosen by the experience related to the implementation of data governance structures (e.g., blockchain, AI, big data) and the role they play in the companies with a successful history of implementing technological solutions to enhance the efficiency of

governance and sustainability. The companies will be selected due to their decades-long dedication to the incorporation of technological advances in their governance procedures, as well as because of their quantifiable contribution to SDG 16 (Peace, Justice, and Strong Institutions). The publicly accessible documents, such as the corporate sustainability reports, SDG indexes, and third-party databases, such as the Global Reporting Initiative (GRI) and the United Nations Global Compact (UNGC), will be used as the sources of secondary data. Such secondary sources will give more information on how companies have performed in embracing technological innovations and how far they have gone in achieving SDG targets, mainly focusing on increasing transparency, accountability, and efficiency.

Primary and secondary sources of data will be utilized in the study, and primary data will be collected via surveys and semi-structured interviews with the business leaders who will be identified as highly active participants in the data governance and technological innovation practices. Such variables will be the clarity of the data management procedures, the quality of the used data, and the security measures of the data. The technological preparedness shall be measured based on the indicators of the level of digital infrastructures, the use of digital tools (e.g., blockchain, AI, big data), and training on the usage of such technologies among the personnel. It will be in the form of a scale that will be used to measure the level of technology use in government institutions. During the interviews, the respondents will be requested to provide their responses to the questions regarding the willingness of their institution to embrace and implement these technologies and the obstacles to their implementation.

Under SDG 16 indicators, they will have measures touching on accountability, justice, access to information, and trust of the population. For instance, the Percentage of government services is open and transparent.

- **16.7:** degree of citizen involvement in decision making.
- **16.10:** Public access to information and safeguarding fundamental freedoms.

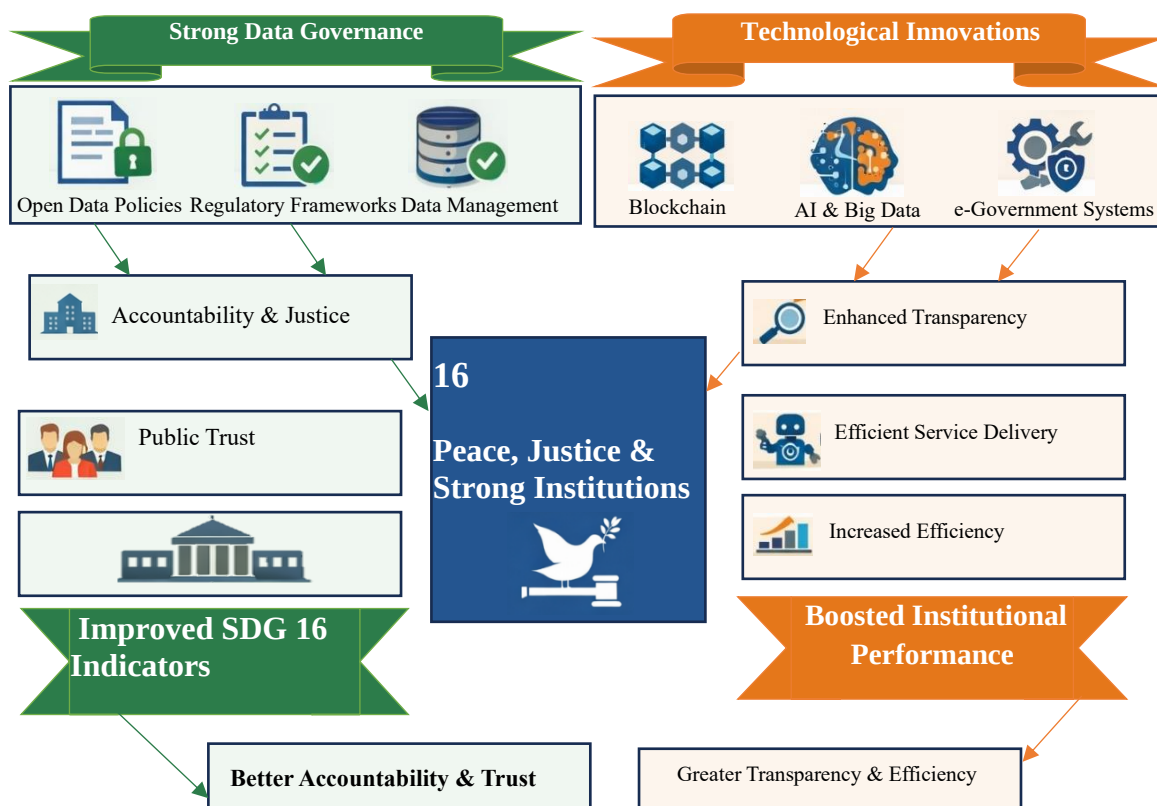


Figure 1: The Role of Data Governance and Technological Innovations in Achieving SDG 16

These pointers will be based on the reports on the country and governance evaluation. The measurement of these indicators and the correlation of these indicators with the level of maturity of data governance and technological innovation preparedness will be possible with the help of the quantitative data gathered.

Figure 1 illustrates the synergistic relationship between data governance structures, technological advances, and the enhancement of SDG 16 indicators. It underscores that accountability, justice, and institutional trust are facilitated by robust data governance, such as open data policies and clear regulatory frameworks. At the same time, technological innovations namely blockchain, artificial intelligence, and big data help to enhance transparency and provide services more efficiently. A combination of these two factors leads to better performance by the institutions thus, directly helps in achieving SDG 16.

V. Results

The findings of the provided research reveal a strong range of tendencies that manifest a relationship between data governance and technological progress and the achievement of the goals of SDG 16. The quantitative and qualitative studies also indicate that data governance systems and technology improvement are essential in improving institutional performance, accountability, transparency, and service delivery, which are important in SDG 16 goals. The data governance maturity analysis shows that good data governance practices are closely related to SDG 16 indicators, in particular, those related to such spheres as accountability, information accessibility, and transparency. Organizations having a higher level of data governance maturity, which is reflected in the well-defined data management protocols, data sharing transparency, and comprehensive data protection measures, are more likely to report higher SDG 16 results. Especially, those countries that had well-developed data governance systems showed a greater proportion of open government efforts (Indicator 16.6) and a greater involvement of citizens in governing (Indicator 16.7). Another positive outcome of the study is that technological innovations, including blockchain, AI, and big data analytics, positively influence the governance processes, making them more transparent, service-delivery, and efficient as a whole. Those institutions that were able to incorporate these technologies adequately had a greater score on SDG 16 indicators of public access to information (Indicator 16.10) and successfully mitigated the occurrence of corruption and inefficiency in providing public services. It is notable that it is possible to have actual benefits in the spheres of corruption reduction and enhancing accountability as a result of AI application to track legal processes and blockchain in governmental procurement.

Although this analysis has led to positive developments, it has also had some shortcomings. As an example, technological change is less felt in poorer or developing countries which is probably because of the poor digital infrastructure. Moreover, since the general efficiency of the data governance structures does not seem to be similar across the regions, it seems that such factors like culture and political will might have an impact on the functioning of these systems.

Table 1: Data Governance Maturity and SDG 16 Performance

Country	Data Governance Maturity	SDG 16 Indicator (16.6: Transparency)	SDG 16 Indicator (16.7: Citizen Participation)
Country A	4.5/5	85%	78%
Country B	3.8/5	75%	65%
Country C	4.2/5	80%	70%
Country D	2.9/5	60%	50%

Table 1 above shows the relationship between data governance maturity and SDG 16 indicators, including transparency (16.6), citizen participation (16.7), and public access to information (16.10). As can be seen, the countries that have a higher degree of maturity in data governance, in accordance with frameworks such as COBIT2019, are expected to have a higher score on these SDG 16 indicators.

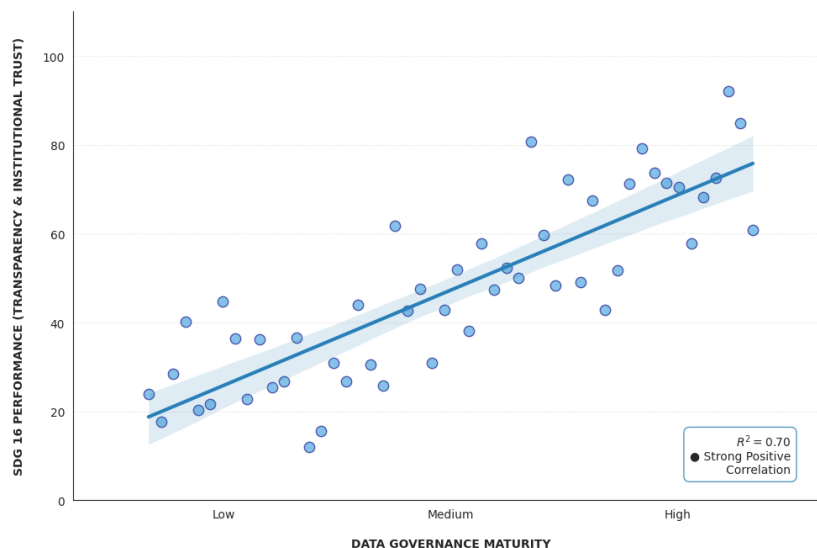


Figure 2: Correlation Between Data Governance Maturity and SDG 16 Indicators

Figure 2 shows that the data governance maturity and SDG 16 performance (with emphasis on transparency and institutional trust) have a positive association. The graph reveals that the higher the data governance maturity, the more SDG 16 indicators improve. The $R^2 = 0.70$ is a strong positive indicator; hence, more robust data governance systems, with high transparency levels and enhanced data management, can have a significant impact on SDG 16.



Figure 3: Configuration Performance Across SDG 16 Outcome Indicators

Figure 3 shows the performance of the various model configurations (Baseline, Data Governance (DGO), Technological Innovation (TIO), and Integrated Model (DGO + TIO)) based on the different SDG 16 outcome indicators: Transparency, Accountability, Inclusivity, Legal Efficiency, and Data Privacy. The heatmap demonstrates that the Integrated Model (DGO + TIO) delivers the best results in comparison with the other settings, in the areas of Transparency, Accountability, and Data Privacy.

VI. Discussion

The results of this paper highlight the importance of serviceable roles of both data governance frameworks and technological innovations in the realization of SDG 16, which aims at fostering peace, justice, and robust institutions. The analysis of the interaction between the two aspects supports the fact that institutions that exhibit high data governance practices are in a better position to fulfill the SDG 16 targets, especially those related to improving transparency, accountability, and institutional trust. Moreover, such technological innovations as blockchain, artificial intelligence, and big data have been proven to positively impact the process of governance, enhance service provision, efficiency, and promote the degree of trust in institutions among citizens. One of the main results of this paper is the high correlation between the maturity of data governance and the positive developments in the SDG 16 results. According to SDG 16 indicators, institutions that have established a robust data governance framework with clear, transparent management and protective protocols are significantly more likely to achieve successful results. Specifically, countries with higher maturity levels of data governance have a higher number of people involved in the decision-making process through open government initiatives (16.6) and greater access to information on how government works (16.7). In general, this means that a properly structured and functioning data governance framework is an essential foundation upon which effective, transparent government institutions can be built and ultimately achieve the goals outlined in SDG 16. Nevertheless, the paper also points out that the effects of technological advancement are uneven depending on the regional and infrastructural conditions. Although technologies such as blockchain and AI have a vast potential, due to the digital infrastructure, they rarely work. Due to a lack of Internet connection, digital literacy and the lack of adequate technology readiness in the institutions of the developing nations, the effect of technological innovations has been less in these areas than in the developed nations. This is an important reason for establishing the digital infrastructure prior to successful integration of these technologies. It is likely that in developing nations the establishment of data governance frameworks will likely create many of the same benefits associated with the foundation of transparent and accountable governance before advanced technologies have been introduced.

The extent to which an area has demonstrated political will and has developed a culture that is congruent with data governance creates a strong possibility of how effective a data governance framework will work in any given area as well as the degree of the technological integration of those areas. An example is in areas where the governance reforms were highly backed by the political community, the data governance practices, and the implementation of technological tools were more successful. Conversely, the positive impacts of these innovations were minimal in regions that had weak governance systems or those possessing distinct cultures that do not embrace new technologies. These results imply that solutions to SDG 16 should be context-specific, and in this situation, governance reforms can be required to respond to the local politics, social and cultural tensions. Another aspect that will be highlighted by the study is that the implementation of data governance and technological innovations necessitates the cooperation of the governments, the entities in the private sector, and the international organizations. Governments can have access to technological expertise, share knowledge, and implement scalable solutions that lead to transparency, accountability, and institutional performance in various sectors by establishing public-private partnerships (PPP). These partnerships can also be used to overcome problems associated with data privacy and cybersecurity, which are paramount in the implementation of technologies such as AI and blockchain in governance procedures.

Finally, although this scientific work makes a profound contribution to the idea of data governance and technological advances in terms of SDG 16, it has a number of shortcomings. The sample and the geographical coverage were restricted, especially towards low-income and weak states. Longitudinal studies are the way forward in future research aimed at evaluating the long-term effects of these innovations on the system of governance, especially in areas that have underdeveloped digital infrastructure. In addition, future research ought to understand the role of political, social, and cultural factors in determining the success of these technologies and also analyze how they could be scaled during different levels of

governance, whether it is local institutions or national governments. This paper concludes that data governance frameworks and the technological advancements that accompany them are integral to achieving SDG 16. These aspects make the institutions stronger and more equitable and fair societies by enhancing transparency, accountability, and service delivery. Nevertheless, to ensure their most significant effect, governments and organizations should tackle the challenges of the region, establish the digital infrastructure needed, and make sure that technological adoption is brought in line with governance structures that facilitate enhancing equity, inclusivity, and transparency.

VII. Conclusion

This paper shows that data governance and technological innovations are essential in the attainment of SDG 16: Peace, Justice, and Strong Institutions. The analysis indicates that there is a significant positive relationship between data governance maturity and SDG 16 indicator improvements, especially in such aspects as transparency, accountability, and the trust of the institution. The more established frameworks of data governance in institutions are likely to score better on SDG 16 outcomes. Also, technological solutions, including blockchain, AI, and big data, are essential to enhance governance by improving service delivery, efficiency, and transparency. The paper has identified two different ways of thinking about how data governance frameworks can be effective. In underdeveloped areas where data governance frameworks are still being developed, data governance frameworks will be more effective than technological advancements. On the other hand, where the technological infrastructure for data governance frameworks and technological advancements is fully developed, technological advancements will be more relevant and effective than data governance frameworks. It offers a detailed discussion on the way data governance structures and new technologies might improve institutional transparency, accountability, and service provision, which will boost the pillars of SDG 16. The paper also provides an empirical model of evaluating data governance maturity and its relationships with SDG 16 outcomes, which can be a significant contribution to policymakers and organizations that aim to enhance governance systems throughout the world. To policymakers, the work highlights the importance of reinforcing the data governance systems, particularly within the developing areas as a pre-requisite toward the adoption of technology and improved governance.

Developing digital infrastructure, increasing data security, and resolving data privacy issues should be the priority of policymakers to establish conditions under which blockchain, AI, and big data technologies can successfully be implemented. Governments must also facilitate cross-sectoral partnerships between the public and the private to develop structures that will enable the use of data to make decisions and institutional responsibility. In the case of organizations, the study shows the significance of investment in data governance maturity as well as technological readiness. Through embracing effective data management and securing and availability of data, the institutions will be able to reinforce their governance practices which will eventually result in the increased public trust. Moreover, companies are to work on personnel training and infrastructure improvement to be able to utilize technological advances such as AI-based and blockchain technologies which can significantly streamline service delivery and governance operations. There are limitations associated with the study despite such contributions. The geographical area was restricted to the countries with different data governance and technological infrastructure, which cannot adequately describe the problems of low-income or vulnerable states. Also, the impact of cultural, political, and societal aspects was not comprehensively investigated, which may have an effect on the efficacy of governance systems and the uptake of technology. Finally, the paper identified that the technological impact assessment process can only be partially relied upon to address the challenge of other issues (i.e. protecting the privacy of individual data) as they are not fully understood yet. Future research must continue to investigate how cultural, political and institutional factors will affect the adoption of data governance structures, develop longitudinal studies and look to investigate how to synergistically move forward with both data governance structures and technology advancements to support the realization of SDG 16.

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