

EXPLORATORY FACTOR ANALYSIS OF INFODEMIC AND INFODIVERSE GOVERNANCE AROUND THE SDGS

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ABSTRACT

The governance of the Sustainable Development Goals (SDGs) is intricately linked to the diversity of information, which influences the participation of interested parties based on their degree of exposure to infomedia or infodiversity. This study, which holds significant importance in the field, aims to compare the theoretical structure of governance with empirical observations. A correlational, transversal, and psychometric work was carried out with 100 students selected for their affiliation to institutions committed to the SDGs. The results suggest a four-factor structure explaining 78% of the variance. About the state of the art where the relationships between corporate governance and the SDGs through responsibility are highlighted, this document indicates the prevalence of four factors: access to information, quality, and veracity of information, participation and collaboration, and informational resilience.

KEYWORDS: Exploratory Factor Analysis, Governance, Infodemic, Infodiversity, SDG.

INTRODUCTION

Infodiversity refers to the diversity of information accessible to different people and communities, including various sources, formats, languages, and content (Biermann et al., 2017). This diversity is essential for equitable access to information, community empowerment, and cultural and traditional knowledge preservation.

Infodiversity has evolved with the development of information and communication technology (ICT). As societies have become globalized and digitalized, access to information has diversified and expanded (Monkelbaan, 2019). However, it's crucial to note that challenges have also emerged, such as information overload, misinformation, and the concentration of information sources in a few hands. These challenges underscore the need for a balanced and diverse information ecosystem, making research in this area more necessary than ever. Before digitalization, information diversity was limited by geographical, cultural, and linguistic factors (Meuleman,

2021). Information was transmitted through print media, radio, and television, with access restricted to those people with the resources and skills necessary to take advantage of these sources. With the emergence of the Internet in the 1990s, infodiversity experienced exponential growth. Access to online information expanded, allowing more people to access a greater variety of sources and points of view. This period also saw the emergence of digital platforms that democratized the creation and dissemination of information. At the same time, the concentration of significant technology corporations began to centralize access to information.

The advent of social networks and the proliferation of mobile devices transformed information diversity, facilitating access to and production of information from anywhere and at any time (Di Vaio et al., 2021). However, problems such as information bubbles, polarization, and the spread of fake news also arose. Infodiversity is directly related to several SDGs, especially regarding inclusion, education, equality, and justice.

Infodiversity is crucial for inclusive and quality education. It allows access to a wide range of educational resources and points of view, supporting lifelong learning and respecting different cultures and languages (Biermann et al., 2023). Equal access to information promotes gender equality by empowering women and girls with the knowledge and tools necessary to participate in society fully. Infodiversity helps reduce inequalities by providing marginalized communities access to information and knowledge to improve their social and economic well-being. Diversity in information is essential for transparency and accountability, strengthening institutions, and promoting just, peaceful, and inclusive societies. International collaboration in disseminating diverse and accessible information supports knowledge exchange and innovation, which is essential to achieving the SDGs. Infodiversity is an essential component for achieving the SDGs, as it promotes equitable access to information, enhances education, and reduces inequalities, among other benefits.

Infodiversity and infodemic are intrinsically related since they both deal with the quantity and quality of available information, but they represent opposite aspects of the information ecosystem (Florini & Pauli, 2018). Infodiversity implies a rich variety of sources, formats, and perspectives, contributing to a higher quality of information. It allows people to access multiple points of view, which can help them make informed and thoughtful decisions. The infodemic, on the other hand, arises when there is an excess of information, especially when this information is of low quality or false. Although a wealth of information may be available, the lack of proper filters and the proliferation of misinformation can overwhelm and confuse people, reducing the overall quality of the information one can access.

Infodiversity promotes equitable access to diverse information, ensuring that different groups and communities can access information relevant to them (Biermann et al., 2014). This is crucial for inclusion and the reduction of inequalities. The infodemic can exacerbate inequalities since not all people have the same ability to discern information quality. Those with less access to education or resources may be more vulnerable to misinformation, which perpetuates or exacerbates inequalities.

Infodiversity supports the development of an informed and critical society capable of facing challenges with a solid understanding based on varied and contrasted information (Lyulyov et al., 2024). On the contrary, the infodemic can destabilize societies by sowing confusion, fear, or distrust, especially in times of crisis such as pandemics, natural disasters, or elections. Information overload and the spread of incorrect data can make it challenging to make good decisions at an individual and collective level.

Technology and the media play a crucial role in promoting infodiversity, facilitating access to diverse sources of information, and disseminating multiple voices (Hansson et al., 2019). However, those same tools can also facilitate the infodemic. Social media, in particular, allows the rapid spread of false or misleading information, amplifying the reach of misinformation.

Infodiversity and infodemic are two sides of the same coin (see Table 1). While infodiversity represents a healthy and balanced information ecosystem, where diverse and quality information is available to everyone, infodemic reflects an ecosystem in crisis, where information overload and poor quality can negatively affect society. Promoting infodiversity is vital in counteracting the harmful effects of the infodemic.

Table 1: Comparison between the infodemic and infodiversity regarding the SDGs.

Aspect	Infodiversity	Infodemic
Definition	Diversity of sources, formats, languages, and information content.	Excess information, including incorrect or false data, spreads quickly.
Impact on SDG 4: Quality Education	Promotes access to various educational resources and points of view, enriching education and respecting cultural diversity.	It can confuse students and educators with contradictory or false information, negatively affecting educational quality.
Impact on SDG 5: Gender Equality	Empower women and girls by providing equitable access to information relevant to their development and well-being.	Misinformation can perpetuate gender stereotypes and inequalities, hindering empowerment.
Impact on SDG 10: Reduction of Inequalities	It facilitates marginalized communities' access to information and knowledge, helping to reduce social and economic inequalities.	The spread of false information can exacerbate inequalities, misinform, or marginalize vulnerable communities.
Impact on SDG 16: Peace, Justice, and Strong Institutions	Promotes transparency and accountability through access to diverse and reliable information.	It destabilizes trust in institutions and promotes misinformation, leading to social conflicts.
Impact on SDG 17: Partnerships to Achieve the Goals	Supports international collaboration through the exchange of diverse and accessible information and knowledge.	The infodemic can hinder global cooperation by spreading rumors and misunderstandings, making effective collaboration difficult.

“Infodiversity networks” refer to communication systems that promote diversity of information and perspectives. In an increasingly digitalized world where information can be easily manipulated or monopolized, infodiversity networks seek to counteract these problems by promoting a plurality of voices, opinions, and sources of information (Siakwah et al., 2020). These networks can include online platforms, alternative media, citizen journalism organizations, activist groups, and freedom of expression advocates. The main objective is to empower people with access to a wide range of views and data, allowing them to make informed decisions and develop critical thinking.

Infodiversity networks can also combat misinformation, promote transparency and accountability, and defend freedom of expression in all its forms (Ahmed & Anifowose, 2024). Infodiversity networks ensure that information is accessible, accurate, and diverse, contributing to a more informed and democratic society.

However, infodiversity networks have achieved the status of information or knowledge repositories without considering governance scrutiny. Understood as the system in which the interests of the rulers and the governed converge, governance requires infodiversity networks to establish the axes, themes, and information and communication channels in order to achieve co-responsibility in public administration (García et al., 2017). The requirement is twofold: On the one hand, governance seeks civil participation in public affairs, and some interested parties assume responsibility for the public function to achieve citizens' voice and vote in state deliberation.

Are there debatable asymmetries between infodiverse governance versus infodemic governance or informational diversity without the civil participation of excluded sectors in the decisions and public administration of the State?

The premise on which this essay is built is based on an asymmetry between governance without infodiversity (from the top down) and infodiversity without governance (from the bottom up). Consequently, the discussion must focus on establishing axes and topics for discussion to achieve governance with infodiversity.

Method

Design. A cross-sectional correlational and psychometric study was conducted with 100 students in institutions committed to the SDGs.

Instrument. The Infodemia and Infodiversity Governance Scale was used, which includes dimensions related to access to information, quality and veracity of information, participation and collaboration, and information resilience. Reliability reached a value of 0.790 for alpha and 0.750 for omega. Normality was established with a Mardia value of 0.30. The KMO adequacy was 0.567. Sphericity was significant. Validity ranged between 0.380 and 0.680.

Procedure. Respondents were contacted via institutional email. They were informed about the objectives and those responsible for the project. They were told that their participation would not be remunerated. They were invited to focus group sessions to homogenize concepts. They were invited to a Delphi study to evaluate the items of the scale that measures governance. The surveys were applied in the facilities of three public universities in central Mexico.

Analysis. The reliability, normality, adequacy, sphericity, validity, adjustment, and residual coefficients were estimated to contrast the hypothesis relating to the significant differences between the theory and the study. Values close to unity except for the residual were assumed as evidence of non-rejection of the hypothesis.

RESULTS

The adequacy analysis suggests the relevance of the scale structure. The KMO values suggest that the scale is suitable for further analysis, ranging from 0.656 to 0.930. The sphericity analysis indicates the fit of the scale structure. The findings indicate significance ($X^2 = 2669.179$; 87 df; $p > 0.001$). The exploratory factor analysis of principal axes with Promax rotation established four dimensions related to access to information, quality and veracity of information, participation and collaboration, and information resilience. The first factor explained 34% of the variance, the second explained 17%, the third was 14%, and the fourth was 11%. The total explained variance reached a value of 78%. The eigenvalue analysis confirms the four dimensions (Fig. 1).

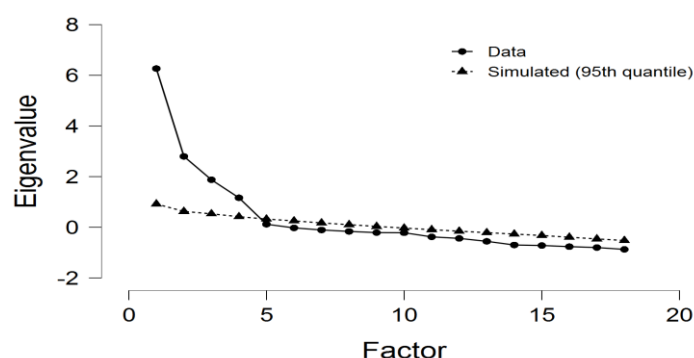


Figure 1: Eigenvalues corresponding to the number of possible factors.

Structural analysis reveals the relationships between indicators and factors (see Fig. 2). The first factors related to information access included capacity, cooperation, entanglement, transparency, control, equity, and diversity indicators. The second factor, which refers to the quality

and veracity of the information, includes the indicators of diversity, capacity, and strength. The third factor regarding participation and collaboration included control, transparency, and control indicators. The fourth factor is related to equity and participation.

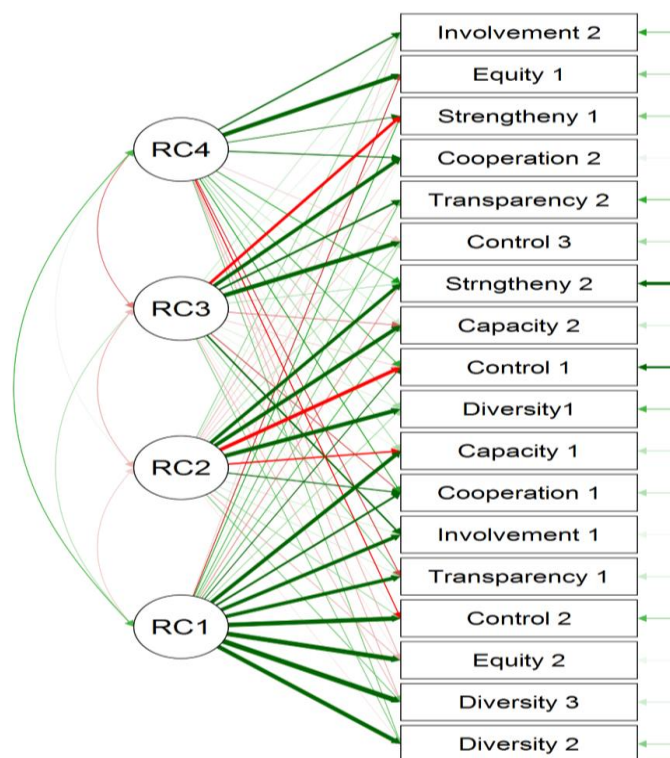


Figure 2: Exploratory factor model.

The adjustment and residual values suggest that the hypothesis related to the significant differences between the theoretical structure of the governance of the SDGs concerning the observations of endemic and infodiverse governance in the present work is not rejected.

DISCUSSION

This work's contribution to the state of the art lies in establishing an exploratory factorial model of principal axes with Promax rotation. The results reveal four factors that explained 78% of the variance.

The literature on governance and overall sustainable goals covers various topics and perspectives (Sadiq et al., 2023). The effectiveness of multi-stakeholder partnerships, particularly public-private cooperations, achieves sustainability goals in urban tourism development. Highlights the importance of participatory decision-making in urban environments to achieve sustainability goals. The corporate governance debate meets the expectations of various stakeholders and focuses solely on the primacy of shareholders.

The need for an inherently sustainable and restorative system of trade and production creates a lasting society

(Van Zanten & van Tulder, 2021). A sustainable cyber-physical energy systems framework suggests incorporating cyber elements into core variables, resources, and governance, and users can significantly shape such systems. A centrally managed, data-driven municipal rodent control system is essential for sustainability, as it allows for a systematic approach to identifying and reducing rodent populations. The Cooperative Constitutional State and its connection to global governance goals, such as the Millennium Development Goals and the Sustainable Development Goals, includes a practical framework for implementing a comprehensive approach to sustainability, emphasizing the need to integrate various goals into sustainable management.

Governance approaches for using natural resources and proposes an integrated governance model for using forests (Loang, 2023). Policy coherence and coordination in the sustainable development of a Blue Economy highlight the role of sustainable urbanism and networked public governance in achieving the goals of sustainability and resilience in urban systems. Shared sustainability policy formulation and spatial green infrastructure planning can drive innovative performance in sustainable urban design

and governance. The regulatory framework of the Federal University focuses on sustainability, emphasizing the evolution of regulations to promote management, innovation, and sustainability within the institution.

Casa Tirao (2015: p. 2) maintains that multiculturalism indicates the excellence of infodiversity, which takes precedence over a single thought. Even when it cites criticism of this management system, it assumes an ontological and humanistic stance to promote multiculturalism, according to infodiversity. One advantage is integrating minorities with the dominant culture without losing identity.

However, multiculturalism and infodiversity have been questioned for avoiding co-responsibility in public administration, which requires identity, voice, and voting (Kymlicka, 2001: p. 23). In this sense, governance is the economic, political, social, and cultural framework in which asymmetries between rulers and the governed can be resolved as long as their debate or controversy assumes co-responsibilities materialized in public administration functions.

Co-responsibility involves ongoing, updated, and specialized training in public administration so that public policies are efficient and effective. Talent training does not guarantee public co-management, but the absence of human capital training does guarantee the seasonality of civil participation and public administration.

CONCLUSION

This paper contributes to the discourse on infodiversity through the lens of multiculturalism by examining the concepts of identity and representativeness. While preserving practices and customs rooted in identity is undoubtedly possible, actual enforceability of minority rights is achieved through representativeness. Migratory flows may exhibit varying degrees of interest in preserving their cultural heritage; however, it is through representativeness that their rights and freedoms are safeguarded. Moreover, in a governance framework, infodiversity evolves from merely being a tool for disseminating identity to serving as an advocate for representativeness. In this context, traditional media and socio-digital networks transition from mere vessels for ideology and propaganda into platforms for dialogue, consensus, and shared responsibilities between leaders and the populace.

REFERENCES

1. Ahmed, A., & Anifowose, M. Corruption, corporate governance, and sustainable development goals in Africa. *Corporate Governance: The International Journal of Business in Society*, 2024; 24(1): 119–138. <https://doi.org/10.1108/CG-07-2022-0311>
2. Biermann, F., Kanie, N., & Kim, R.E. Global governance by goal-setting: the novel UN Sustainable Development Goals approach. *Current Opinion in Environmental*

- Sustainability*, 2017; 26: 26–31. <https://doi.org/10.1016/j.cosust.2017.01.010>
3. Biermann, F., Stevens, C., Bernstein, S., Gupta, A., & Kabiri, N. Integrating governance into the sustainable development goals, 2014; 3. UNU-IAS. https://www.oneworld.net/sites/default/files/resources/2016-05/Post2015_UNU-IAS_PolicyBrief3.pdf
4. Biermann, F., Sun, Y., Banik, D., Beisheim, M., Bloomfield, M.J., Charles, A., & S  nit, C.A. Four governance reforms to strengthen the SDGs. *Science*, 2023; 381(6663): 1159–1160. <https://doi.org/10.1126/science.adj5434>
5. Casa Tirao, B. New forms of search and creation of knowledge and open access: a challenge from infodiversity. In E. Morales Campos (Coord.). *Actors in infodiversity networks and open access*, 2015; 1–15. Mexico: UNAM
6. Di Vaio, A., Trujillo, L., D'Amore, G., & Palladino, R. Water governance models for meeting sustainable development goals: A structured literature review. *Utilities Policy*, 2021; 72: 101255. <https://doi.org/10.1016/j.jup.2021.101255>
7. Florini, A., & Pauli, M. Collaborative governance for the sustainable development goals. *Asia & the Pacific Policy Studies*, 2018; 5(3): 583–598. <https://doi.org/10.1002/app5.252>
8. Garc  a Lirios, C., Carre  n Guill  n, J., & Hern  ndez Vald  s, J. Governance of Human Development: Contrast of a model of the perceptual determinants of the intention to use the Internet in users of a public library in Mexico City. *Interconnecting knowledge*, 2017; (3): 39–56. <https://is.uv.mx/index.php/IS/article/view/2529>
9. Hansson, S., Arfvidsson, H., & Simon, D. Governance for sustainable urban development: the double function of SDG indicators. *Area Development and Policy*, 2019; 4(3): 217–235. <https://doi.org/10.1080/23792949.2019.1585192>
10. Kymlicka, W. (2001). *Politics in the vernacular: Nationalism, multiculturalism, and citizenship*. OUP Oxford. https://books.google.com/books?hl=es&lr=&id=ZwlREAAAQBAJ&oi=fnd&pg=PP8&dq=Will+Kymlicka+multiculturalism&ots=1V4V_Vv6Ci&sig=SpqzVDKjunXAUKJg3YPgbCVs7Pc
11. Long, O. K. The road to sustainable investing: corporate governance, sustainable development goals, and the financial market. *Institutions and Economics*, 2023; 33–57. <http://ojie.um.edu.my/index.php/ijie/article/view/44738>
12. Lyulyov, O., Pimonenko, T., Saura, JR, & Barbosa, B. (2024). How do e-governance and e-business drive sustainable development goals? *Technological Forecasting and Social Change*, 199: 123082. <https://doi.org/10.1016/j.techfore.2023.123082>
13. Meuleman, L. Public administration and governance for the SDGs: Navigating between change and stability.

- Sustainability, 2021; 13(11): 5914.
<https://doi.org/10.3390/su13115914>
14. Monkelbaan, J. (2019). Governance for the sustainable development goals. Singapore: Springer.
<https://link.springer.com/content/pdf/10.1007/978-981-13-0475-0.pdf>
 15. Sadiq, M., Ngo, T.Q., Pantamee, AA, Khudoykulov, K., Ngan, T.T., & Tan, L.P. The role of environmental social and governance in achieving sustainable development goals: evidence from ASEAN countries. Economic research-Ekonomska istraživanja, 2023; 36(1): 170-190.
<https://doi.org/10.1080/1331677X.2022.2072357>
 16. Siakwah, P., Musavengane, R., & Leonard, L. (2020). Tourism governance and attainment of the sustainable development goals in Africa. In Sustainable Tourism Policy and Planning in Africa (pp. 146-174). Routledge.
<https://www.taylorfrancis.com/chapters/edit/10.4324/9781003038832-9/tourism-governance-attainment-sustainable-development-goals-africa-pius-siakwah-regis-musavengane-llewellyn-leonard>
 17. Van Zanten, J.A., & van Tulder, R. (2021). Towards nexus-based governance: defining interactions between economic activities and Sustainable Development Goals (SDGs). International Journal of Sustainable Development & World Ecology, 28(3): 210-226.
<https://doi.org/10.1080/13504509.2020.1768452>