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Biancone Paolo Pietro, Silvana Secinaro
Valerio Brescia, Michele Oppioli

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Popular Financial Reporting as a governance and accountability tool to manage complex plurality of needs: the case study of the University of Turin

Biancone Paolo Pietro

Full professor of business administration at the University of Turin. Italy

Silvana Secinaro

Full professor of business administration at the University of Turin. Italy

Valerio Brescia

Associate professor at the University of Milan. Italy.

Michele Oppioli

PhD Candidate in Business and Management at the University of Turin. Italy

Corresponding Author:

Valerio Brescia

valerio.brescia@unimi.it

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ABSTRACT

This study examines whether “Popular Reporting” enables universities to fulfil sustainability reporting guidelines while facilitating effective stakeholder engagement. Using the University of Turin as a case study, the research explores how this reporting approach addresses the dimensions of polycrisis by aligning institutional actions with stakeholder needs. The methodology involves the analysis of institutional documents, semi-structured interviews with governance representatives, sentiment analysis to identify key issues and an evaluation of the dialogic capacity of reporting to meet governance and stakeholder informational demands. The findings highlight that Popular Reporting provides a concise yet comprehensive representation of institutional activities and their broader context, ensuring the inclusion of stakeholder-relevant topics. By adhering to the “University Sustainability Report” guidelines and RUS-GBS standards, this dynamic reporting approach bridges the gap between traditional social reporting and the complex requirements of sustainability communication. The study underscores the practical value of Popular Reporting as a dialogic tool that strengthens governance processes while fostering meaningful stakeholder relationships. Its implications extend beyond the University of Turin, suggesting broader applicability in academic institutions seeking to enhance accountability and address stakeholder sentiment. Future research could expand these insights to different contexts, further validating Popular Reporting as an effective mechanism for institutional sustainability and stakeholder engagement.

Questo studio esamina se il “Popular Reporting” consente alle università di soddisfare le linee guida per la rendicontazione di sostenibilità, facilitando al contempo un efficace coinvolgimento degli stakeholder. Utilizzando l'Università di Torino come caso di studio, la ricerca esplora come questo approccio di rendicontazione affronti le dimensioni della “polycrisis” allineando le azioni istituzionali con le esigenze degli stakeholder. La metodologia prevede l'analisi di documenti istituzionali, interviste semi-strutturate con i rappresentanti della governance, analisi del sentiment per identificare i temi chiave e una valutazione della capacità dialogica della rendicontazione per soddisfare le richieste informative di governance e degli stakeholder. I risultati

evidenziano che il Popular Reporting fornisce una rappresentazione concisa ma completa delle attività istituzionali e del loro contesto più ampio, garantendo l'inclusione di argomenti rilevanti per gli stakeholder. Aderendo alle linee guida del "Bilancio di Sostenibilità di Ateneo" e agli standard RUS-GBS, questo approccio di rendicontazione dinamica colma il divario tra la rendicontazione sociale tradizionale e le complesse esigenze della comunicazione della sostenibilità. Lo studio sottolinea il valore pratico del Popular Reporting come strumento dialogico che rafforza i processi di governance promuovendo al contempo relazioni significative con gli stakeholder. Le sue implicazioni si estendono oltre l'Università di Torino, suggerendo una più ampia applicabilità nelle istituzioni accademiche che cercano di migliorare la responsabilità e affrontare il sentimento degli stakeholder. La ricerca futura potrebbe espandere queste intuizioni a diversi contesti, convalidando ulteriormente il Popular Reporting come meccanismo efficace per la sostenibilità istituzionale e il coinvolgimento degli stakeholder.

Keywords: Popular Reporting, dialogical accounting, "polycrisis," university, stakeholder engagement, sentiment analysis

1 – Introduction

Over time, interest in polycrisis has risen sharply in academia, leading to numerous definitions in the literature. Polycrisis concern several disparate crises that interact with each other so that the crises themselves and the effects generated are mutually reinforcing (Tooze, 2022). Given the current rise in polycrisis, organisations are increasingly interested in managing these crises and their effects. In the university context, the University presents difficulty in considering changes due to the demographic crisis and climate change, the transparency of management, the decline in the trust of the main stakeholders, and the ability to intervene in social inequality (Ramírez & Tejada, 2018; Naciti *et al.*, 2024). Currently, many organisations are showing a growing interest in sustainable development issues by undertaking actions and behaviours that are characterised by social and environmental responsibility (Grossi *et al.*, 2021; Guthrie & Farneti, 2010; De Nicola & Fratini; 2024). Organisations increasingly use accountability tools that allow them to report to stakeholders on their commitment to pursuing sustainability objectives aimed at polycrisis impact (RUS - GBS, 2023; Turolla *et al.*, 2008). Entities operating in the public sector have different non-financial reporting, such as Sustainability Reporting, Integrated Reporting, webpages/social media, Popular Reporting, and management statements and commentaries (Fusco & Ricci, 2018; Ferioli, 2022).

However, despite the well-established concept of sustainability in contemporary organisations, it is disheartening to note that public bodies are still making slow progress in reporting on sustainability, social and environmental strategies, and actions taken (Manes-Rossi *et al.*, 2020; Biancone *et al.*, 2024a). The lack of discussion on the pros and cons of different non-financial reporting formats or the introduction of new formats is a further concern (Biondi & Bracci, 2018). The low level of sustainability reporting through non-financial reports and the need for more commitment from institutions is a pressing issue (Fusco & Ricci, 2018; Di Gerio & Fiorani, 2024). This lag is also evident in universities, as the Sustainability Reporting Guidelines for Universities were only released in 2023, with the aim of increasing the reporting and communication of the actions and strategies undertaken by these institutions in terms of sustainability (RUS - GBS, 2023; Brescia & Campra, 2023).

Given the gap in the literature, this study aims to answer the following research questions:

RQ1. *Does Popular Reporting make it possible to respond to and meet the demands highlighted by the Sustainability Reporting Guidelines required of universities in their reporting?*

RQ2. *Does Popular Reporting allow dialogical reporting aimed at exchanging information among the different stakeholders in a polycrisis context and identifying areas for improvement of the report?*

RQ3. *Is the sentiment analysis used within Popular Reporting useful for improving and making the institution's decision-making process more effective and efficient?*

Considering these considerations, the study adopted dialogical accounting as a framework to understand whether Popular Reporting allows to meet the requirements highlighted by the guidelines for the Sustainability Reporting of Universities, whether a proper exchange of information between stakeholders takes place and whether sentiment analysis allows to identify key issues to be explored within the report. The method used to achieve this aim was to analyse the University of Turin case study. In particular, the authors analysed the Popular Reporting of the University to understand the aspects identified above. The case study analysed is particularly interesting because the University of Turin is the first university in Italy to have used Popular Reporting for its reporting.

In addition, the study contributes to the evolution of this research topic through three main contributions. The first concern is fulfilling the requirements highlighted by the Sustainability Reporting Guidelines for Universities. The second contribution allows for the confirmation in the literature that the case study analysed. Therefore, Popular Reporting through a dialogical approach allows for a greater exchange of information between stakeholders and identifies areas for improvement in the report. Finally, the third contribution concerns confirming sentiment analysis as a valuable tool for more effective and efficient decision-making.

2 – Literature Review

2.1 – Complexity, Polycrisis and Different Needs

The complexity of modern times can be determined by the term polycrisis as defined by Morin and Kern (1998). Over the years, the concept has proliferated and increased in interest, leading to numerous definitions in the literature. The concept of polycrisis is defined by Helleiner (2024) as a set of distinct crises that interact in such a way that they and their effects reinforce each other. This definition is also confirmed by Tooze's (2022) study, which argues that the different crises are disparate but at the same time interact with each other, making the whole even more impactful than the sum of the individual crises. The various types of polycrisis can vary according to their level of generality, temporality and spatiality (Tooze, 2022). The interesting aspect of the study of a polycrisis concerns the interconnections between different types of crises in different thematic areas and the study of the effects of a single crisis (Helleiner, 2024). Furthermore, within the polycrisis, it is not possible to identify a number one problem to which all others are subordinate, showing how strong the interrelation between them is (Morin & Kern, 1998).

In agreement with Helleiner (2024), the different definitions in the literature on the definition of the term polycrisis show that polycrisis differ in four dimensions. The first

dimension concerns the different spatialities of the different polycrisis (Tooze, 2022); the second concerns temporality in the sense of short or long duration, as stated by Juncker (2016) that some crises may be short-term phenomena; the third dimension concerns generality in the sense of whether they involve society as a whole or only one of its dimensions, e.g. a specific entity such as the European Union (Juncker, 2016); finally, the fourth dimension assumes that polycrisis differ according to the types of constituent crises they are composed of. Some crises may be those caused by climate and demographic change, financial globalisation, political instability and uncertainty, economic pressure, social inequalities and declining public trust in institutions (Juncker, 2016). The focus on the term polycrisis has quickly become the buzzword for politicians, financiers and policymakers (Henig & Knight, 2023).

Needs from different stakeholders are increasing disproportionately in the wake of the 2008 financial crisis. Polycrisis refers to the complex entanglement of multiple crises that interact in ways that amplify their effects, creating unpredictable and systemic disruptions. Unlike isolated crises, a polycrisis emerges when different global systems—such as economic, environmental, political, and social structures—experience simultaneous stresses that reinforce one another, leading to cascading failures (Lawrence *et al.*, 2024). This concept highlights how crises are no longer independent events but rather interwoven through common stressors, domino effects, and feedback loops that escalate their impact beyond what would occur if they were separate incidents. For example, climate change, geopolitical conflicts, economic instability, and pandemics have interconnected effects that exacerbate vulnerabilities across global systems, making traditional crisis management approaches insufficient. Addressing a polycrisis requires holistic, adaptive, and interdisciplinary strategies that consider the interdependencies between crises rather than treating them in isolation. According to the concept of a new social contract for sustainability, all societal actors—including the private sector, public institutions, civil society, and policymakers—must collaborate to drive sustainable development (SDG) and implement Agenda 2030 goals effectively (Siirilä & Salonen, 2024). Sustainable governance requires systemic transformations that move beyond reactive crisis management to proactive solutions that integrate ecological, economic, and social dimensions. By fostering inclusive decision-making, responsible resource management, and innovative policies, sustainability strategies can help prevent crises from escalating and ensure a more stable and just future. In essence, sustainability serves as both a response to polycrisis and a proactive mechanism for building resilience against future global disruptions.

2.2 – *Different Types of Reporting*

Due to a growing interest in issues related to sustainable development, there has been a diffusion on the part of organisations of behaviours and actions marked by socio-environmental responsibility logic (Grossi *et al.*, 2021). Organisations use accountability tools to report to stakeholders on their commitment to pursuing sustainability goals (RUS - GBS, 2023). Different types of non-financial reporting have been defined in the literature among entities operating in the public sector. There are different types of reporting tools, such as Sustainability Reporting, Integrated Reporting, webpages/social media, mixed reports, and other types in addition to Popular Reporting, which include, e.g. strategic plans, management statements and commentaries (Manes-Rossi *et al.*, 2020). These non-financial reporting documents are mainly prepared by entities in the educational sector, local governments, public companies, and healthcare institutions (Fusco & Ricci, 2018).

Public sector organizations adopt various forms of non-financial reporting to enhance transparency, accountability, and stakeholder engagement. The most common types include Sustainability Reporting (SR), Integrated Reporting (IR), Popular Financial Reporting (PFR), and Web-Based/Social Media Reporting (Manes-Rossi, Nicolò, & Argento, 2020). Sustainability Reporting (SR) focuses on disclosing an organization's environmental, social, and governance (ESG) performance (Yáñez *et al.*, 2019). Many public institutions follow the Global Reporting Initiative (GRI) guidelines to ensure standardized disclosure of sustainability efforts. Integrated Reporting (IR), developed under the International Integrated Reporting Council (IIRC) framework, aims to provide a holistic view of an organization's value creation by integrating financial and non-financial information, emphasizing connectivity between resources, governance, and stakeholder engagement. Popular Financial Reporting (PFR) is designed to make financial information more accessible to citizens, ensuring that non-experts can understand budgetary decisions and fiscal sustainability (Biancone *et al.*, 2024a). This approach enhances democratic participation by simplifying complex financial data and using visual tools to improve public comprehension. Additionally, Web-Based and Social Media Reporting has gained traction as a real-time, cost-effective method for public sector organizations to communicate sustainability and financial information (Sangiorgi, Mazzara, & Siboni, 2017). This approach enables greater engagement with diverse stakeholders and ensures continuous updates on policy decisions and performance metrics. While these reporting formats aim to improve public sector accountability, challenges remain in standardization, stakeholder participation, and ensuring meaningful transparency rather than symbolic compliance. The adoption of non-financial reporting continues to evolve, influenced by regulatory frameworks, institutional pressures, and the growing demand for public accountability (Tranfield, Denyer, & Smart, 2003).

Institutions prepare sustainability reports to meet the requirements of funding agencies, legal requirements, and stakeholder expectations (Bellringer *et al.*, 2011). Sustainability reports allow a certain level of integration between sustainability aspects and economic information of the institution where narrative disclosure is present to a greater extent than quantitative disclosure (Guthrie & Farneti, 2008). The Sustainability Reporting Guidelines for Standard Universities (RUS - GBS, 2023) describe the main features that university sustainability reports should contain within them. The guidelines identify two main sections, the first dedicated to the identity of the university while the second to the sustainability report in different areas and allowing for some measurements. Following RUS - GBS (2023), the first section delves into aspects concerning the mission and value orientation, the reference scenario and context, the governance system and organisational set-up, areas of intervention, strategies and policies. Moreover, the second section deals with teaching and training, scientific research, third mission, human resources, inclusion and social justice, environmental resources, economic-financial resources, and stakeholder/activity matrix. The guidelines allow for an understanding of the approach and commitments that institutions, with particular reference to universities, must make when constructing their sustainability report based on their strategies (Biancone *et al.*, 2019). The aim is to effectively communicate universities' unique identity and commitment towards sustainability, including environmental, social, and economic aspects, concerning impacts and ongoing efforts towards a sustainable future. However, one of the main limitations of this type of document is that they very often only have an effect in the initial adoption period and lose their effectiveness in the long run. In addition, being a stand-alone document, the

information communicated within the report is often inconsistent or incomplete (Manes-Rossi *et al.*, 2020). Furthermore, according to Farneti *et al.* (2019), the organisation-specific GRI guidelines are often not followed, and the willingness to publish is often driven by managerial aspects and not by profound organisational changes.

Integrated reporting is a document used by organisations to communicate financial and non-financial information through a single report (Lambooy *et al.*, 2014). With reference to public sector organisations, this report allows for an improvement in the sustainability reporting process, improved decision-making, and greater involvement of managers in non-financial aspects. In accordance with (Brusca *et al.*, 2018), the integrated reporting of universities also focuses primarily on social and sustainability values as well as the interests expressed by stakeholders with the aim of increasing competitiveness and achieving the objectives of the third mission. However, according to Veltri and Silvestri (2015), integrated reporting often stems from institutional pressures, relationships with different stakeholders are not emphasised, which considerably reduces the reliability of this type of reporting. The substantial increase in stakeholders' use of social media has led public sector organisations to communicate information about their activities differently than traditional ones. The use of web pages and social pages allows public and private organisations to obtain personalised information concerning the situation in real time, improving organisational decision-making (Xindong Wu *et al.*, 2014).

Popular Reporting satisfies the need to communicate more simply and concisely with stakeholders by presenting financial and non-financial information, considering principles widely used in integrated reporting (Brescia *et al.*, 2016). Following Grossi *et al.* (2021), Popular Reporting allows for the integration of two theories: the first concerns the need to create new public relations among stakeholders by simplifying the literature of information reports based on accounting and accrual systems; while the second theory concerns the desire of public sector organisations to inform and involve main stakeholders concerning funding and expenditure incurred. In this sense, Popular Reporting is a report that makes it possible to stimulate and increase stakeholder participation in decision-making processes while also increasing the transparency of the results achieved and of economic stability (Aversano *et al.*, 2019). Furthermore, Popular Reporting enables dialogic reporting to exchange information between politicians, citizens, and public managers through feedback posted on social media to improve decision-making (Grossi *et al.*, 2021). Dialogic accounting is an alternative approach to traditional accounting that emphasizes pluralism, stakeholder engagement, and deliberative democracy (Bebbington, Brown, Frame, & Thomson, 2007). Unlike conventional accounting, which is primarily designed to serve financial capital providers and focuses on standardized reporting frameworks, dialogic accounting seeks to broaden accountability by including diverse perspectives, particularly those of marginalized or underrepresented groups. This approach is rooted in critical and participatory theories, recognizing that different stakeholders have conflicting interests, values, and power dynamics that shape the accountability process. Dialogic accounting encourages open discourse and debate, moving beyond the mere disclosure of financial and non-financial information to facilitate genuine democratic engagement. It challenges the assumption that accounting should be neutral and instead argues that accounting systems should be designed to accommodate multiple viewpoints and social priorities (Godowski, Nègre, & Verdier, 2020).

In this framework, accounting is not just a tool for recording and reporting economic activities but a means to foster dialogue and contestation over decision-making processes (Dillar & Vinnari; 2019). It advocates for the inclusion of stakeholders in determining what should be accounted for and how, ensuring that accounting serves broader social and environmental objectives rather than being constrained by financial imperatives (Pärl *et al.*, 2022).

The characterising pillars of Popular Financial Reporting in comparison to other forms of social reporting are only understanding, inclusion, dissemination, integrated view, representative need, the use of technology for the detection of need, the dialogic approach through the use of social platforms, and the presence of socially oriented social impact assessment (Biancone *et al.*, 2019; Biancone *et al.*, 2024; Bianconet *et al.*, 2024a). Based on the literature, it is relevant to understand whether Popular Reporting allows synthetically communicating the critical areas identified according to the guidelines "The Sustainability Report of Universities" and the RUS - GBS Standards (2023) based on an approach that makes it dynamic in content and time.

3 – Method

The Popular Reporting of the University of Turin (Unito) was built for the first time in 2023 and is the first case in Italy. The report was constructed by the author based on international guidelines and evidence. The document was created under the supervision of a university research group that is not involved in the governance but is an expert in issues of dialogic and popular reporting in public organizations. The analysis allows us to investigate structuring the document's contents and information through the dialogic and continually evolving approach that characterises this type of report considering the polycrisis context and needs. The document includes several sections, such as the introductory section in which the structure and dissemination purpose of the document is defined, the dissemination plan, and the main stakeholders. The following section deals with the description of the university context, including national and international comparative rankings that focus on the quality of the university. Subsequent sections address issues related to strategic governance objectives, the United Nations Sustainability Goals (SDGs), gender equality and adopted policies, and the quality of research and publications. Further sections include aspects of social impact regarding sustainability and energy consumption, public engagement, sentiment analysis on the most discussed and most debated topics, and evidence on the main and peculiar aspects that drove policies. In addition, a complete version has been created and is available online on the university's website, as well as a paper version in a reduced format that contains the essential elements. The case study is interesting because the data and information disclosed within it meet the essential requirements called for by the RUS - GBS Standards guidelines (2023) and the needs of the main stakeholders considering university strategic plan. Following the literature, this report is not intended to replace the sustainability report but to share a representation that is easy to interpret and concise for stakeholders. In addition, the working group provided online questionnaires to stakeholders such as students and academic experts in the business sector for feedback on the features and content the report should include. The use of the stakeholder questionnaire makes it possible to identify features and criteria that must be met and, at the same time, provides elements for discussion and comparison for future technical and academic investigations.

As mentioned above, this case study is based on a longitudinal case study of the University of Turin. The method used to produce the report employs two different approaches: a statistical and descriptive analysis of the responses offered by the main stakeholders and experts on the structure and contents of the report collected through online questionnaires and semi-structured in-person interviews. The second approach concerns general and specific sentiment analysis on Popular Reporting, focusing only on the Report published by the University of Turin.

Starting from the first approach, the authors meticulously relied on semi-structured interviews and questionnaires to triangulate observations and information from Popular Reporting (Biancone *et al.*, 2019). Depending on the number of stakeholders, semi-structured interviews were conducted if the number was small, as in the case of lecturers and officials, or questionnaires were used for students when the number was high. In both cases, the authors obtained and structured interviews and questionnaires to obtain feedback on the same aspects, ensuring a comprehensive and robust data collection process.

The semi-structured interviews were conducted in May, June and July 2023 with individuals holding the highest managerial positions in the University's governance. Specifically, the interviewees held positions related to the financial aspects of the University, the quality of processes, the rector, the vice-rector of the University and the communication office. The interviews lasted 335 minutes, with an average of 67 minutes each. Concerning the questionnaire submitted to the stakeholders of the University of Turin, 3,336 responses were obtained. The authors collected feedback on the questionnaire through the dissemination of the QR code with access to the questionnaire. Dissemination took place at the various locations of the University and in classrooms during the lectures of the three-year and master's degree courses. Participation in the questionnaire was voluntary and completely anonymous. In addition, 40 experts on financial and non-financial reporting, including full professors, associate professors, researchers, and post-docs of the scientific disciplinary sector dedicated to Business Economics (SECS-P 07) of some Italian universities, participated in the content analysis and the realisation of the document by sending it.

Moving on to the second approach inherent to sentiment analysis, according to Caratù *et al.* (2023), the analysis process uses social media to understand sentiment concerning managerial choices, thus understanding general opinion and the level of stakeholder engagement. Using this technique, it is possible to process a search based on keywords and identify positive, neutral, and negative attributes to extract the opinion associated with each keyword. The analysis techniques implemented generally fall into categories, the one used in the study being statistical methods that rely on elements of supervised and unsupervised machine learning (Hussain & Cambria, 2018). These methods classify recorded sentiment based on word co-occurrence frequencies.

The analysis of the final impact of the POP Reporting of the University of Turin used Talkwalker software, which allows social media monitoring and social listening to monitor sentiment on social networks against trends, brands, or keywords (Biancone *et al.*, 2024; Troisi *et al.*, 2018). The software performs content and sentiment analysis using statistical methods (Hussain & Cambria, 2018). In the conducted study, the authors opted for content and sentiment analysis with a time horizon of one year using a search query with the key topics as: "Popular Reporting" OR "Pop" AND "Università degli Studi di Torino" OR "Unito".

4 – Results

Popular Reporting makes it possible to represent in a usable, concise, and accessible manner the work and organisational reality of public bodies, school districts and universities, as in the case of the University of Turin. To draw up the report, it is appropriate to start defining the contents, returning the results, and having a continuous dialogue with the stakeholders. For this reason, for some years now, artificial intelligence has been used in the production of Popular Financial Reporting to identify key information, which allows the mapping and synthesising of critical issues through the reactions and interactions generated on social media. Identifying suitable topics makes it possible to meet the information needs of stakeholders. Popular Reporting is a document capable of synthesising the critical areas identified according to the guidelines "The Sustainability Report of Universities" and the RUS-GBS standards, according to an approach that makes it dynamic in content and time. The University of Turin's Popular Reporting comprises several sections to meet this need (Biancone *et al.*, 2023).

The first section is dedicated to the context in which some aspects of the University of Turin are explored, such as its 120 locations spread over seven main poles, its 27 departments, and four special teaching facilities and strategic objectives of the year. This section delves into the strategic plan's objectives for the years 2021-2026, the reputation and comparison in national and international rankings of the University of Turin, the governance system and the administrative structure. The second section of the document is dedicated to the University's personnel, such as the number of lecturers and technical-administrative staff. It also emphasizes the University's commitment to gender equality, showcasing trends and improvements compared to the national average of other universities. This commitment is not just a statistic, but a reflection of our values and dedication to creating an inclusive environment for all. The third section delves into aspects inherent to the institution's budget (Figure 1), focusing on the participatory budget, divided into income and expenditure, the Balance Sheet (Figure 2), the Income Statement, and the annual Unito's income.

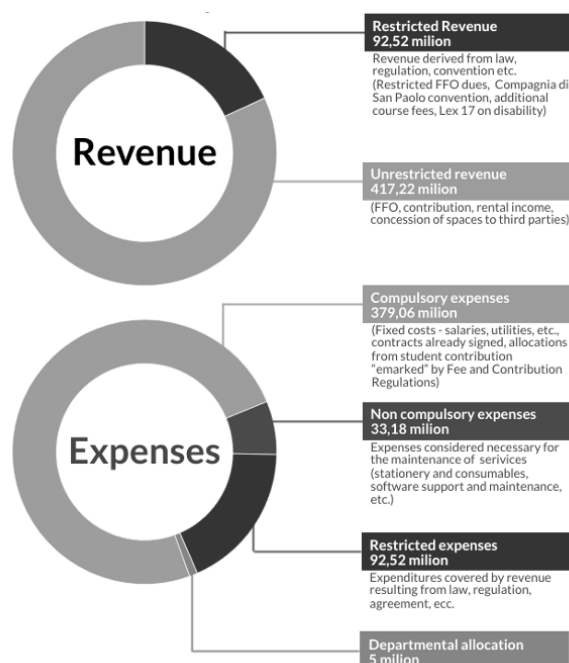


Fig. 1 – Budget 2022: Subdivision into types of Revenue and Expenditure
(Source: Unified Budget 2022)

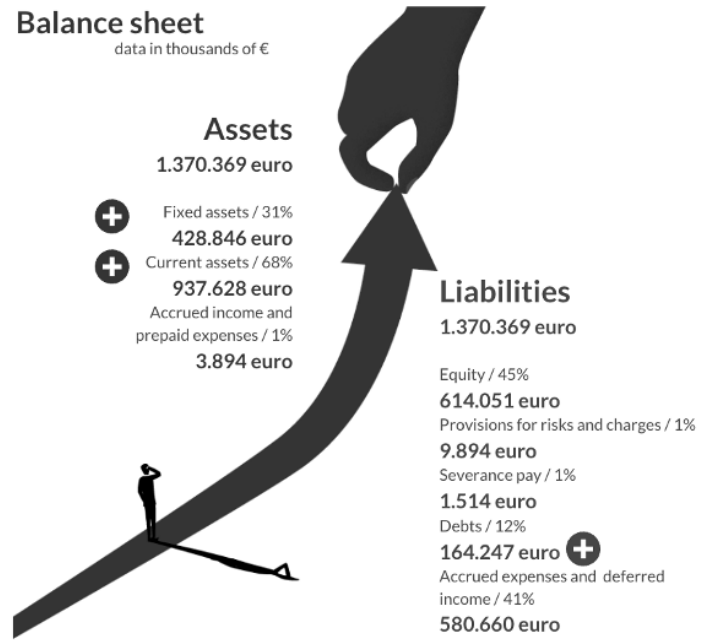


Fig. – 2 – Balance Sheet
(Source: Revised Annual Budget 2022)

Data and information about economic and financial aspects are expressed and represented in graphical forms that are easy to understand and interpret by all stakeholders, even those who are not experts in the subject.

The fourth section provides information and data on teaching and training. There are data on enrolments, the origin of matriculation, the general attractiveness of higher education, and the number of students enrolled in master's and doctoral schools. The following section deals with scientific research, including information on competitive calls, research output and outcome results. The sixth section is devoted to the Third Mission of Public Engagement. It informs stakeholders about the spin-offs created by the university, enhancing research and developing new businesses in the area, and the number and categories of public engagement carried out in the area. Social and environmental responsibility is dealt with in the seventh section of the document, in which information is provided concerning the consumption of energy sources of Unito in the last seven years linked to CO₂ emissions, showing the university's vital interest in using renewable energy sources. The eighth section is dedicated to the impact of the University of Turin. It includes study support information such as student exemptions and facilities, the effect of knowledge on social, environmental, and economic impact issues, and the impact of public engagement projects.

Finally, the last section of Popular Reporting deals with sentiment analysis, which allows us to identify opinions and discussions on websites, social networks, and blogs, delve into stakeholder opinions, and ascertain possible problems (Figure 3). The analysis can also obtain socio-demographic data on stakeholders such as age, gender, level of internationalisation, professions, interests, and aspects of expressed sentiment.

Turning to the results of the questionnaires and then to those of the interviews, a descriptive analysis of the sample was conducted, and the results were expressed in frequencies and percentages for categorical variables or through averages and standard deviations for continuous variables. 3,336 users responded to the questionnaires.

The most relevant topics in 2022

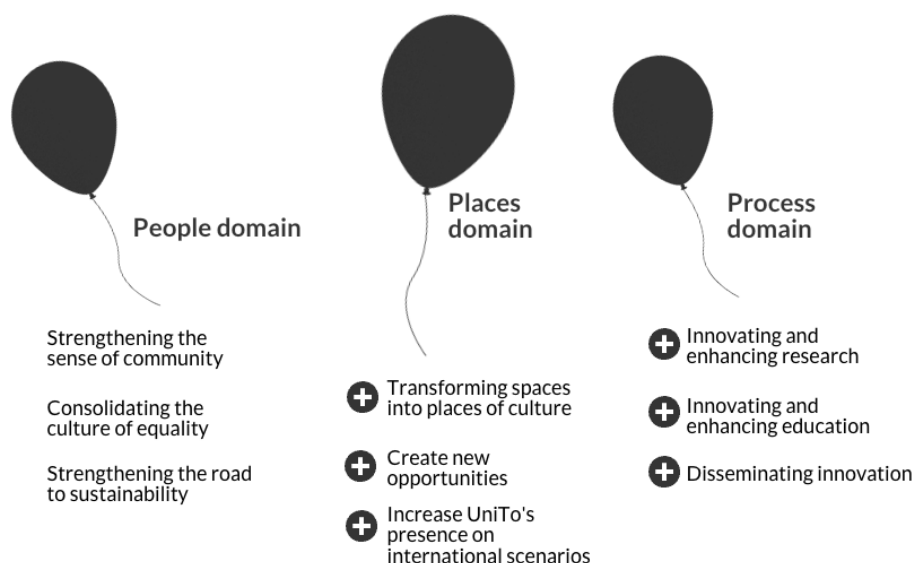


Fig. 3 – The most relevant topic in 2022

(Source: Author elaboration using Talkwalker software)

The sample shows a prevalence of males (55.75%) over females (44.00%) and 0.25% of non-binary students. Concerning the age of the users who responded to the questionnaire, they showed a prevalence of 19 and 20 years old, with an upper secondary school qualification enrolled in a bachelor's degree for 92.04%. The most precise and sufficiently comprehensive sections for the respondents are the budget, teaching and training, and the context description. In contrast, respondents suggest better clarity for the sections on scientific research and social and environmental responsibility. Respondents prefer reports with a length of 20 pages for 36.03%. The same information was obtained for the paper document, with respondents preferring 7 pages. Furthermore, concerning the representation of the results in graphic form, the respondents say that 90.80% of them are represented clearly and comprehensively. From the point of view of communicating with the university, 27.90% of the respondents intend to communicate with the university using social media, while only some plan to use e-mail. In addition, the transmission to the main stakeholders should take place via targeted meetings with the various stakeholders, social networks, the university websites, paper distribution, e-mails and other types on a residual basis.

Concerning the experts' analysis, 23% of the experts are female, while 77% are male, with an average age of 30 years. The origin of the respondents is 70% from universities in Northern Italy, while the remaining 30% came from Central Italy, the Islands and Southern Italy. Regarding length, the experts suggest a document length of 37 pages, while the paper summary version should be 25 pages. All experts say that the infographic clarifies the contents, and comparing data and information with previous years improves understanding. Turning to the dissemination of the document, the experts suggest reels on social media, websites, institutional staff and student emails, and classroom presentations. For collecting opinions concerning Popular Reporting, the experts recommend the university website, social media, and questionnaires.

The results obtained from the semi-structured interviews with individuals holding positions related to the financial aspects of the university, the quality of processes, the rector, the vice-rector of the university and the communication office allow us to delve into some interesting topics for the study conducted. The interview with the chief financial officer highlighted the need to explain in depth and in a user-friendly manner the investments made by the university over the last 10 years. In the interview with the university's dean, the focus is on showing and explaining the impact of the research. In addition, the rector emphasises the need to motivate that a decrease in the quantity of research conducted does not directly correspond to a lower quality of the results achieved. The interview with the vice-rector revealed that focusing on the university's sustainability is also important. In the last interview with the communications office, the main need was to improve stakeholders' understanding of student employment data.

The sentiment analysis insert as a section of the Popular Report highlights results to support the identification of the complexity and information needs of the different stakeholders. The improved dialogue approach allows decision-makers to respond faster and more effectively to the information needs of stakeholders by analysing their opinions and feedback. The sources of the sentiment analysis information are mainly derived from online news, blogs, and social media. From the point of view of sentiment distribution, most of the sentiment is positive. The topics that generate the most positive engagement are related to sustainability, investments dedicated to education and culture, activities devoted to smart cities, and sharing results with citizens. The positive sentiment is characterised by themes such as the sharing of Popular Reporting of the University of Turin in the style of Anglo-Saxon countries, investment of more than EUR 100 million by the institution through the Pnrr and 1,400 research projects underway, 26 new agreements with other universities in 13 different countries, growth in the share of students not resident in Piedmont.

5 – Discussion and Conclusion

5.1 – Implication #1. *The criteria adopted are those issued by the RUS-GBS (2023), and Popular Reporting fulfils its requirements*

As emerged from the analysis of the literature, the Sustainability Reporting Guidelines for Standard Universities (RUS - GBS, 2023) define the main characteristics that reports disclosed by universities should contain within them. In particular, the guidelines consist of two main sections, the first concerning the university's context and the second concerning the sustainability-related actions implemented by the university (Biancone *et al.*, 2019). Thanks to the Popular Reporting case study of the University of Turin, it was possible to demonstrate how a university can communicate its financial and non-financial information concisely and understandably to all stakeholders, considering the principles of the RUS-GBS 2023. The case study under analysis demonstrated the two theories found in the literature concerning creating new public relations between stakeholders by simplifying their information relations and showing the willingness of public sector organisations to inform and involve stakeholders concerning funding and expenditure. Furthermore, from the point of view of dialogical accounting, the case study demonstrates that Popular Reporting allows for a greater exchange of information between politicians, governance, citizens, students, and professors through feedback obtained on social media, better than social reporting by exceeding its limits but respecting the themes of the guidelines. The case study supports the present literature by

demonstrating how, thanks to social factors, decision-makers can be more effective and efficient in their decisions by understanding the needs of stakeholders. The different sections of which the Popular Reporting of the University of Turin is composed allow us to highlight the characterising pillars of this type of report. The sections of the document highlight all the characteristics of Popular Reporting. The case study analysed shows that Popular Reporting allows communication of the key areas identified according to the guidelines "The University Sustainability Report" and the RUS - GBS Standards (2023), making it dynamic in content and time.

5.2 – Implication #2. *The insights from the questionnaires and interviews allow for dialogical communication and improve the content of Popular Reporting*

The questionnaires administered to stakeholders and experts in the Annual Report and the semi-structured interviews yielded some suggestions for improvement. The users who responded suggested improving the section on scientific research to provide more detail regarding the incidence of scientific research compared with other international universities. In addition, users suggest increasing the description of the table on the quantification of scientific production, increasing web communication related to scientific research with specific references, and describing the main research topics. In addition, respondents to the questionnaire highlight possible improvements in the section dedicated to social responsibility. They suggest describing the activities to be carried out in the future and strategic decisions, describing in more detail the projects aimed at increasing the university's green spaces and in which projects the university invests in sustainable energy. Respondents also recommend expanding the comprehensibility and clarity of the sentiment analysis in some respects, more description concerning tuition fees and additional explanations regarding research. To support the dialogue aspect of the report, respondents could express their opinions on the number of pages in the document by using questionnaires. Interesting information was obtained regarding the representation of the results in graphical form and the comparison with previous years, which made the data more accessible to understand. In addition, the respondents also provided information regarding the channels to be used to disseminate the report.

The experts, whose insights are highly respected and valued, have provided further feedback with the aim of enhancing the Popular Reporting of the University of Turin. They have identified the context section, the impact of the university's actions, and teaching and training as the clearest sections. Their expertise has led them to suggest improvements in the sections of Social and Environmental Responsibility, Personnel, and Third Mission. They recommend better specifying aspects concerning personnel and improving the definition of the third mission by explaining that it is the economic valorisation of research and the production of cultural goods. Therefore Popular Reporting allows us to manage the complex vision generated by the polycrisis composed of the four dimensions as defined in the literature by Helleiner (2024). As a result, the report ensures that difficulties related to the university's communication and governance capacity are overcome.

5.3 – Implication #3. *Themes emerging from the sentiment analysis*

Sentiment analysis allows us to understand the opinions and feedback of stakeholders concerning a specific topic through popularity ranking, target identification and collection and aggregation processes supported by automated tools (Troisi *et al.*, 2018). Through social media

monitoring systems using Talkwalker software, stakeholder opinions and feedback were analysed and considered. In the case study of Popular Reporting at the University of Turin, useful topics were identified for further analysis in terms of decision-making. In this sense, decision-makers are more aware of the sentiment on different issues to improve the process and decisions regarding effectiveness and efficiency. The main topics that emerged from the sentiment analysis concern the context, the investments made by the institution, the budget, the students, the projects carried out by the university, and the calls for tenders in which the University of Turin participates.

Thus, the sentiment analysis allows to respond to the four dimensions of polycrisis identified by Helleiner (2024) identifying the following main themes. Starting from the dimension of diversity in the spatiality of polycrisis (Tooze, 2022), the themes identified by Popular Reporting of the University of Turin are creating new opportunities, innovating and enhancing research, and innovating and enhancing teaching. Turning to the dimension of temporality in the short or long duration (Juncker, 2016), the University of Turin poses as themes the strengthening of the path towards sustainability, the irradiation of innovations, and the consolidation of the motherland's culture. Concerning the third dimension, which is the involvement of society as a whole or only one of its dimensions (Juncker, 2016), the University identified the themes of strengthening the sense of community and increasing the presence of the University of Turin in international scenarios. Finally, as a fourth dimension, such as the types of constituent crises of which polycrisis are composed (Helleiner, 2024), the University of Turin has defined the transformation of spaces into places of culture as a theme.

In conclusion, the analysis conducted highlights a positive impact of the Popular Reporting of the University of Turin which has created engagement on some issues that summarize some peculiar elements. Popular Reporting finds a strong connection and integration with other participatory technology tools that could be developed, such as a mobile phone app and online participation platforms. These aspects are essential to demonstrate that Popular Reporting responds to the needs of the various stakeholders and addresses the complex contexts generated by the difficulties present in polycrisis (Tooze, 2022).

Like any research, this study also has some limitations. The first limitation is related to the reference context of the University of Turin. However, the study conducted can be generalised because it is based on the guidelines "The Sustainability Report of Universities" and the RUS - GBS standards (2023). The dialogic approach of Popular Reporting responds better both to standardised information being a complex reality and to the constant changes and crises generated by the internal and external environment.

Consequently, the results must be generalised by considering the historical period of analysis and the geographical and social context being analysed. The second limitation concerns aspects inherent to sentiment analysis and the software used to carry it out. In particular, the Talkwalker software used to carry out sentiment analysis is limited in its ability to identify and map private social profiles or those on unconventional platforms. Finally, the third limitation concerns communication between stakeholders on social media, which could reinforce power differentials and reduce the quality of communication.

Looking ahead, the authors propose that the study conducted should be further explored in diverse contexts. This expansion of research could potentially generalise the results obtained to other settings that embrace Popular Reporting, offering a promising avenue for future investigations.

6 – References

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