IDMO IMPACT ASSESSMENT FRAMEWORK

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Italian Digital Media Observatory

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How to quote this document
De Rosa S., Saracco F., Nicolai A. (2022), IDMO Impact Assessment Framework.

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Executive Summary

Nowadays, tackling disinformation is one of the most urgent issues faced by governments and institutions worldwide.

The Parliamentary Assembly of the Council of Europe in Resolution 2326 of 31st January 2020 has expressed a serious concern "*about the scale of information pollution in a digitally connected and increasingly polarised world, the spread of disinformation campaigns aimed at shaping public opinion, trends of foreign electoral interference and manipulation*" (Pace, 2020). Same position has been adopted by the European Commission, who agree that spread of disinformation can have serious consequences on threatening our democracies, but also on polarizing debates, and putting the health, security and environment of EU citizens at risk. The European Parliament, in a report published by the Special Committee on Foreign Interference in all Democratic Processes in the European Union, including Disinformation (Kalniete, 2022) state "*whereas foreign interference, information manipulation and disinformation are an abuse of the fundamental freedoms of expression and information as laid down in Article 11 of the Charter of Fundamental Rights of the European Union and threaten these freedoms, as well as undermining democratic processes in the EU and its Member States, such as the holding of free and fair elections; whereas the objective of foreign interference is to distort or falsely represent facts, artificially inflate one-sided arguments, discredit information to degrade political discourse and ultimately undermine confidence in the electoral system and therefore in the democratic process itself*". In addition, international organizations, such as the OECD (Matasick et al., 2020) are taking into serious consideration the effects of disinformation on countries and societies reflecting and proposing measures to reduce the effect of the phenomenon.

International institutions and worldwide experts agree that the only way to counteract disinformation is to create a holistic action plan: media and digital literacy, pre-bunking and debunking, fact-checking, hard and soft regulation are all relevant actions that need further and further efforts from a heterogeneous group of people. Indeed, academics, developers, fact-checkers, policy makers, citizens, all of them have a role in fighting disinformation at different levels (Matasick, 2020; de Cock Buning, M. 2018).

However, there is another point which is widely discussed in the scientific literature with still little evidence gathered: the assessment of the impact of disinformation.

Aim of the document is to provide additional reflections on disinformation fighting starting from the assumption that only if we can measure and assess the impact of disinformation, understanding the impacts that disinformation has on our lives and how we will be able to deploy proper countermeasures in order to make our societies more resilient to false and misleading information.

To make this step possible, research is needed in exploring the different dimensions of impact related to disinformation. Accordingly, the authors of the deliverable intend to contribute to the research on disinformation providing a methodological framework to measure the political impact of disinformation online and offline.

The work presented here follows a work of research conducted by the authors in a previous European funded project but it is improved and tailored on the new landscape of discussion around disinformation and adapted to new research questions raised by IDMO.

The deliverable is structured in **3 Chapters**.

Chapter 1 reports about the previous steps that leads to the definition of the current methodological framework.
Chapter 2 describes the IDMO methodology.
Chapter 3 provides some reflections about methodology implementation and conclusions.

1. Towards a framework for mapping the impact of disinformation

In the last years, scholars and academics have been debating on the need for a methodological approach to quantify the impact of disinformation (Reuters Institute, 2018; Lazer et al. 2018). Several approaches have been proposed and applied. Most of them focus on social network analysis techniques applied to specific topics, such as impacts on opinions, impacts on rates of vaccination and also impacts on electoral outcomes (Allcott and Gentzkow, 2017; Fourney et al. 2017). Other examples of network theory applied to social media are provided by Cherepnalkoski et al. (2016; 2017), who determined the political affiliation of the Members of the European Parliament according to retweets, and by the scholar investigating polarization and the role of co-chambres effect (Morales et al., 2015). In relation to political aspects, several studies focused on political activities using Twitter or data coming from social media. To mention some of them, Garimella et al (2016) focused on the analysis of Twitter to understand the political debate, as well as Connover et al. (2011) analysed the political situation in the USA. Fourney et al. (2017) analysed the correlation between the spread of fake news across US states and voting outcomes in the US.

What these studies have in common is that they are mainly focused on the analysis of patterns and connections on social media, with little effort in experimenting combined methodologies to spotlight what happens off the social media. This means that the evidence retrieved by the analysis explains the processes on the social media trying to provide some hypotheses on how this is reflected on the social interactions outside the platforms. The main shortcoming is that such approaches do not allow us to collect empirical evidence on the real effect of disinformation on people. Some attempts in this direction have been made, for instance, by Allcott and Gentzkow (2017) who analysed the role of fake news in the Trump victory in the 2016 US presidential elections through combined methodologies. However, even if research is progressing, it is still missing, in the academic and political debate, a clear understanding and a tangible measure of the impacts of disinformation on public and personal opinion, culture and policy.

In order to contribute to the research on the topic, the authors of the present document faced the issue in a previous research European project aimed at tackling disinformation: the Social Observatory for Media Analysis (SOMA), funded by the European Commission and running from 2017-2020. Within its own activities, the project has finalized a framework to map three different disinformation areas of impact: social, economic and political. The aim of the previous research was to define a comprehensive methodology that could respond to the need of the quantification of disinformation's impact. In that deliverable (De Rosa and Nicolai, 2020), the authors drafted different areas of impact and related dimensions and specific methodologies for data collection and analysis.

To summarize, as reported in the SOMA deliverable D5.1, the social impact has declined in terms of a significant change that addresses a pressing social challenge. The aim of the social index is to understand the changes that have occurred on individuals at micro level. The social impact index is composed of 7 sub-categories:
1. Impact on news awareness and bias on information spread on social media
2. Impact on information quality
3. Impact on news media access
4. Impact on social inclusion
5. Impact on opinions and behaviours change through the use of social media
6. Impact on digital skills

7. Impact on media literacy and digital media literacy

Another relevant aspect of disinformation reported in the methodology is related to the economic sphere. Platforms, in fact, are changing ways of consumption and users' economic behaviours also dramatically influencing the media value chain. This created high impacts on new business models, also creating some distorting effects (e.g. clickbaiting). One of the most relevant dimensions is the connection between disinformation and advertisement. To clarify those aspects, the SOMA methodology has defined the following 4 sub-dimensions:

1. Impact on news consumption patterns
2. Impact on users subscription to online journals
3. Impact on online advertising
4. Impact on transparency of media ownership, as an element to map the changes on impact media value chain

Finally, within the methodological framework, the political impact index looks at how disinformation influences democratic processes having an impact on citizens' political participation. The SOMA methodology is composed of 6 sub-dimensions dedicated to analysing the political impact of disinformation on citizen everyday life. The dimensions are the following:
1. Impact on digital democracy
2. Impact on trust in institution
3. Impact on electoral votes
4. Impact on media freedom and pluralism
5. Impact on access to information and trustability of news outlet
6. Impact on polarization

According to the SOMA project, a depth analysis of the impacts of disinformation should consider the combination of all sub-dimensions for the three areas of impact (Figure 1).
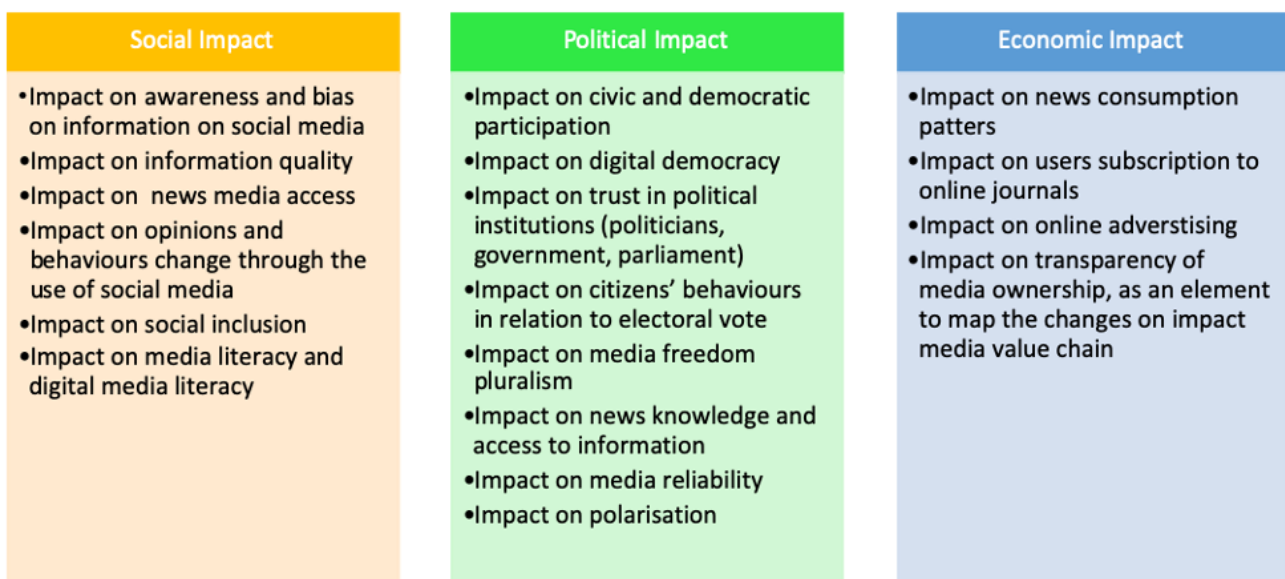
Social Impact	Political Impact	Economic Impact
•Impact on awareness and bias on information on social media •Impact on information quality •Impact on news media access •Impact on opinions and behaviours change through the use of social media •Impact on social inclusion •Impact on media literacy and digital media literacy	•Impact on civic and democratic participation •Impact on digital democracy •Impact on trust in political institutions (politicians, government, parliament) •Impact on citizens' behaviours in relation to electoral vote •Impact on media freedom pluralism •Impact on news knowledge and access to information •Impact on media reliability •Impact on polarisation	•Impact on news consumption patters •Impact on users subscription to online journals •Impact on online advertsing •Impact on transparency of media ownership, as an element to map the changes on impact media value chain

Figure 1.SOMA impact assessment framework

The SOMA methodology is useful to draft several dimensions to have a comprehensive analysis of the phenomenon taking into consideration the different angles under analysis by science and

academia. On the other hand, the main shortcoming of the methodology is that the study would need different approaches for the investigation of such different research questions. This makes the analysis quite challenging and difficult to achieve. Above all due to difficulty in data access, who certainly limits the capability to retrieve information on crucial aspects (e.g. impact on online advertising).

So, according to knowledge gathered through literature review and to the lessons learned from previous validation through the SOMA project, the authors of this deliverable have taken part of the methodological approach developed in the previous report (D5.1) and adapted to new research's needs, making it more flexible and effective. The research question has been narrowed to respond to one of the most urgent issues to be faced. In line with that, the aim of the current report is to suggest a methodological framework that could provide evidence on a quite urgent topic in Italy: the impact of disinformation on the trustworthiness of institutions.

1.1 The political impact of disinformation on trust in institutions

As reported by the Media Pluralism Monitoring (2022) "*The media ecosystem has rapidly evolved in recent years. Significant changes have been observed in the way that the news has been produced, disseminated and consumed. Technological advancements have created new opportunities in the area of media freedom and media pluralism, but have also prompted numerous new sources of risk, including, but not limited to, the unprecedented spread and impact of disinformation and hate speech (Allcott & Gentzkow; 2017); a lack of transparency in relation to algorithm-driven news intermediaries; the increasing importance of private technology companies in governing communication online (Gillespie, 2018; Nechushtai, 2018); the extreme polarisation of public debate (Barberá et al. 2017; Pfetsch, 2018; Fletcher & Jenkins, 2019); as well as the decreasing viability of the legacy news media and traditional journalism (Parcu, 2019; Pickard, 2020; Usher, 2021). These issues are largely perceived as having an impact on the public sphere, on pluralism, and on the very health of democracy*".

As stressed by the latest OECD's report on Trust in Public Institutions (OECD, 2022), the challenges faced by the media ecosystem have a serious impact on the public trust.
To use Hameleers et al (2022) words "*there are concerns that the growing doubts about the veracity and honesty of political information are associated with decreasing levels of trust in the news media (e.g. Bennett and Livingston, 2018; Van Aelst et al., 2017). This may seem intuitive; trust is an evaluation of how likely a trustee fulfills expectations by a truster (Baier, 1986; Bauer, 2014; Coleman, 1990; Hardin, 2006). In democratic societies, informing citizens reliably and correctly is the main task of the news media. A lack of trust in the news media would thus indicate that citizens do not think that the media reliably fulfill this task. This may be expressed as either an absence of trust (i.e. skepticism, or a more critical attitude towards the news media and other institutions) or distrust (i.e. cynicism, or a blanket rejection of the news media; see e.g. Pinkleton et al., 2012; van der Meer, 2017). In either case, when citizens believe that the information provided by the media is largely inaccurate, or even deliberately misleading, this likely damages their trust*".

On the other hand, public trust is crucial for governments and institutions to be entitled to operate in the management of complex issues reinforcing the power of the institutions and its norms. In this sense, public trust is seen as an input to governance but, on the other hand, it can also be perceived as an *outcome* of governance. As stated by OECD (2022) "*Trust is an expression of how people perceive their public institutions and what they expect of their government*".

To a certain extent, trust can be seen as a circular process due to the fact that trust has an impact on policy outcomes and trust is also influenced by the policy making process.

Having said that, recent scientific evidence (Jennnings et al., 2021) shows that the skepticism towards the news media suggests that lack of access to reliable information is a factor of distrust. This means that the connection between the level of trust in media and the level of trust in institutions and governments deserves to be further investigated. Just to make an example, Eurobarometer (European Parliament, 2022) has launched a survey to look at media habits, trust in different media sources as well as attitudes towards the threat of disinformation. What emerged in the study conducted on a representative sample is that the "citizens' perceptions of the European Union and the European Parliament are influenced by what they see, hear and read in various media". In terms of habits, as reported in the report, it emerged that European citizens trust traditional broadcast and print media more than online news platforms. Overall, public TV and radio stations are the most trusted news source in the EU (49%), followed by written press (39%) and private TV and radio stations (27%).

In 2017, the OECD work has identified five main public governance drivers of trust in government and institutions. They capture the degree to which institutions are responsive and reliable in delivering policies and services, and act in line with the values of openness, integrity and fairness. The dimensions are:

- responsiveness
- reliability
- integrity
- openness
- fairness

Recent revisions (Brezzi et al., 2021), to the Framework - intended to guide public efforts to recover trust in government during and after crises - identify two additional dimensions that play a role in generating public trust. These are:

- cultural, socioeconomic and political drivers, and;
- government's capacity to address global and intergenerational issues

These various drivers interact with each other to influence people's trust in public institutions.

According to what stated in the previous paragraphs, the aim of the deliverable is to add a specific component to the drivers of trust in government institutions based on the role of social media in influencing people's political beliefs and opinions. The hypothesis is that an unhealthy media ecosystem, in which disinformation flourish, lowers the level of trust in governments and institutions.
Accordingly, the main aim of the research is to respond to the following question: what is the impact of disinformation spreading online on people's trust in governments and institutions?

To be able to respond to the question, an ad-hoc methodological framework was developed as reported in the following Chapter 2.

2 The IDMO impact assessment framework

As anticipated, the IDMO impact assessment intends to provide a methodological framework to respond to the following question: what is the impact of disinformation spreading online on people's trust in governments and institutions?

To respond to such a question the methodology is based on a combined approach which investigates both: i) disinformation spreading on social media platforms; ii) level of trust in institutions. The two issues will be investigated through quantitative methodologies. The measurement of disinformation online will be made through social network analysis; the analysis of people's trust in institutions will be conducted through surveys. Then, results of both research will be analyzed to provide a unique understanding about how disinformation spreading affects people's trust.

The following paragraphs describe the selected dimensions and indicators for both the social network analysis and the survey.

2.1 Disinformation spreading on social media platforms: IDMO's dimensions and indicators

The analysis of disinformation spreading on social media opens up some major challenges in terms of methodologies. In particular, it is important to clarify i) what information is possible to be retrieved and more meaningful; ii) the unit of analysis to be considered; iii) characterization of collective behaviors.

2.1.1 Introduction

Users in online social networks (OSNs) have the possibility to perform a plethora of different actions: in addition to creating a new content, they can share, like and comment on the one authored by others, as well as they can build friendship relationships and follow the latest updates of some other accounts. In this sense, the most appropriate framework for the study of OSNs is the one of Complex Systems, i.e. the discipline that studies systems composed of many interacting items and the emergence of collective behaviors that cannot be explained following each single item.

In this framework we will start from the available data to characterize the single piece of news or the single user, to further describe the global features of the wider information system of an online debate. In the following paragraphs, we will call *microscopic behavior* the way the individual user interacts with others or the way the single piece of news spreads, while *macroscopic* (or *global*) *behavior* is the one of the entire system.
Most of the analysis of the exposure of online users to mis- and disinformation are limited by the data availability of the various online social networks platforms. Therefore, proper indicators should consider even the access of the information necessary for the analysis. In fact, the various platforms release different type of data: CrowdTangle releases the total number of unique visitors to a post or a page on Facebook or Instagram, but it does not release the information regarding every single user[1]. Twitter provides access to the information per users, but, for instance, the rate limits to access the follower and friend networks are particularly strict, such that a comprehensive analysis is not feasible[2].

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[1] https://help.crowdtangle.com/en/articles/1140930-what-data-is-crowdtangle-tracking
[2] https://developer.twitter.com/en/docs/twitter-api/data-dictionary/introduction

Let us conclude this introduction with a final remark. Most of the proposed indicators are presented keeping in mind Twitter, since, even if it is relatively "small", it has been among the most central OSNs in political communications and since Twitter data availability, even if still extremely partial, is among the most complete.

We are aware that in the very last months, due to a change of property, Twitter is experiencing many different turbulent changes. Independently on the final aspect that Twitter will find, we intend to properly modify and adapt indicators and tools in this document to the analysis of the next version of Twitter, as well as of other OSNs, given their data availability.

2.1.2 Data retrieval and details for the microscopic description

2.1.2.1 Disinformation annotation

Even if each false information may be dangerous, the spreading of disinformation on large scales may be particularly risky for a large portion of society. In this sense, in many studies in the literature, the approach is to move from the analysis of the single piece of news to the reputability of the source of news in a wider thematic discussion (this approach is ubiquitous in the OSN analysis, but see, for instance, the Methods section of (Bovet et al, 2019) for further discussions). Of course, this approach has some clear downsides: for instance, a website that on average publishes reliable contents, may still, by accidental carelessness, publish a non-checked piece of news, as, on the other hand, a low reputability news outlet may correctly report a fact. Nevertheless, in the analysis of disinformation diffusion in large campaigns, it is practically impossible to check each single piece of news produced on the web. Therefore, we will leverage fact-checkers to annotate news outlets and tag each URL shared based on the reputability of its source.

2.1.2.2 Infodemic Risk Index

The maximum of the risk associated with the diffusion of a piece of news was presented in (Gallotti et al, 2020) as Infodemic Risk Index (IRI) and it considers the total number of potential readers of a non-reliable piece of news. While it could be argued that the presented measure may overestimate the effective impact of a disinformation message (in fact, the final number of readers or accounts engaged with the given message will be much lower than the total number of followers), nevertheless it provides an idea of the possible impact of the diffusion of the given piece of news. Moreover, we will consider the possibility of refining the original definition to better capture the infodemic risk.

2.1.2.2 Users' engagement

Accessing the number of visualizations of the single post is a hard task: not all platforms release this information, nor it is freely available to all academics[3]. Moreover, visualizations do not provide any impression of users while visualizing the piece of information (or even if they got one). Instead, by analyzing users' reactions we have more precise information about what the users may have thought. Analyzing the impressions (e.g. likes, dislikes, share, retweet …) of the users to the various m/disinformation posts or messages is much easier and provides clearer signal of the engagement of the user with the single piece of information.

2.1.2.3 Users' characterization: influencer, broadcasters, social bots

Due to their role in the online debate, the various accounts can be classified in different ways. The user's characterization provided in Ref. (González-Bailón et al, 2013) resulted to be particularly

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[3] https://developer.twitter.com/en/docs/twitter-api/migrate/whats-new

successful: based on their number of retweeters of followers, users can be broadcasters (if they are retweeted more than they tweet) or influencers (if they also have more followers than friends). Also, in the spread of disinformation, automatic accounts, or "social bots" (Cresci et al, 2015; Ferrara et al, 2016; Cresci, 2020) are particularly relevant. Even if automatic accounts are not necessarily malevolent, in most of the cases, they are used in order to inflate the popularity of a message or of an account and in many cases they substantially influenced the online debate (Stella et al, 2019; Bovet et al, 2019; Caldarelli et al, 2020).

2.1.3 Collective behaviors

The indicators presented above are intended to characterize the individual users or the single piece of information shared. Nevertheless, counting how many the frequency of disinformation messages or what is the incidence of social bots in a specific debate in OSNs does not provide any insight to design measures to limit the spread of disinformation campaigns. In the recent literature about OSNs, several collective phenomena were shown, i.e., echo-chambers, discursive communities or coordinated behaviors. The microscopic description of users and messages mentioned in the subsection above will be used to further characterize these macrostructures.

2.1.3.1 Echo-chambers, discursive communities

In the literature there are different -and sometimes complementary- ways of describing the online behavior of users in online social networks. Part of these characterizations are due to known phenomena from social sciences that are amplified (or even measured for the first time) by OSNs. Probably one of the most famous is the echo-chamber: the reliability of a piece of news inside a group of users strongly interacting among themselves is due to the popularity that it acquires inside the group, regardless of the veracity of the piece of information (Jamieson, Cappella, 2008; Garrett, 2009; Del Vicario et al, 2016; Zollo et al, 2017). Actually, the phenomenon described above is based on the organization of the network in terms of groups with similar interests interacting among themselves, sometimes called *discursive communities* (since they take part to the definition of a common discourse; Becatti et al, 2019; Caldarelli et al, 2020; Caldarelli et al, 2021; Radicioni et al, 2021) and on the similarity among the sources accessed (and shared) in order to build the individual belief.

2.1.3.2 Coordinated behaviors and the significant flux of disinformation

The effect of disinformation campaigns may be more dangerous depending on where they appear in online social networks. Nevertheless, analyzing the structure of online social networks is complicated by the huge presence of random noise that can alter a proper interpretation of the measurements (De Clerck et al, 2022). In the last years, theoretical tools derived by Statistical Physics and Information Theory have been used to detect the statistical significant signal from the random noise (Cimini et al, 2019). Such information was used to detect the relevant flux of disinformation inside the various discursive communities (Caldarelli et al, 2021), revealing, among other things, non-trivial coordinated behaviors (Caldarelli et al, 2020). Such tools can be used in order to highlight the presence of non-trivial structures in echo chambers and discursive communities and further characterize the relevant flux of information therein.

2.1.4 Synthesis of the microscopic and macroscopic approaches and limitations

Once all microscopic indicators are calculated and macroscopic structures are obtained, all the information can be integrated into a holistic view of the OSN information ecosystem.

More in detail, for both echo-chambers and discursive communities, we will consider the number of influencers, broadcasters and social bots included in each cluster; regarding the disinformation shared, we will consider the frequency of disinformation messages (as captured by the presence of URL from unreliable sources), the engagement of the accounts in the cluster with disinformation messages and the clusters' average IRI. We can further characterize the spread of disinformation by focusing on the activity of each group of users (i.e. influencers, broadcasters, social bots) related to the diffusion of disinformation messages (as captured by the presence of URL from unreliable source), i.e. the frequency of disinformation messages created and shared by influencers, broadcasters or social bots, the average engagement of users in the clusters with disinformation messages shared by influencers, broadcasters or social bots, etc.

Finally, we will see possible superpositions between echo-chambers and discursive communities, and, in both clusters of users, we will focus on the relevant structure. In this sense, we will investigate how the various facets of the macroscopic organization of the online debate interact.

Let us finally add that we did not mention Natural Language Processing (NLP) tools in the proposal above. For instance, the sentiment expressed in the messages spread can add relevant information in order to measure the effects of the polarization of the political debate or to detect the presence of hate speeches. Nevertheless, the tools proposed above, leveraging on fact checkers annotation of news outlets, will be already carrying quite a great amount of information. We will discuss how to add the information regarding the analysis of the messages shared in a second step of the analysis.

2.2 Trust in institutions: IDMO's dimensions

As stated by Uslaner (2018) the concept of trust is one of the essential topics discussed in social science theory. As summarized by the OECD (2017), in the literature trust has been measured to assess social capital by several authors, among the others: Knack and Keefer, 1997; Helliwell and Putnam, 2007; Algan and Cahuc, 2013.

However, considering the wide list of studies on the topic "*while many scholars agree on the essential role trust plays as a concept in social theory, they do not necessarily agree on its meaning (Bacharach and Gambetta 2001; Gambetta 1988; Hardin 2002; Misztal 2013; Nooteboom 2002; Seligman 2000; Uslaner 2002; Warren 1999). In fact, trust research has produced an impressive number of definitions that all too often diverge in important aspects (Bauer 2017; Rousseau et al. 1998)*" (Uslaner, 2018).

To avoid confusion, the focus of this report is the political trust and the definition we are embracing is the one made by the OECD (2022), where trust is defined "*as a person's belief that another person or institution will act consistently with their expectation of positive behavior. Trust offers people confidence that others, individuals or institutions, will act as they might expect, either in a particular action or in a set of actions (OECD, 2017). While trust is influenced by actual experience and facts, it is often a subjective phenomenon based on interpretations or perceptions (OECD, 2021)*"[4]. Once we have defined the concept, another crucial issue, widely discussed in the scientific literature, is how to measure trust. Literature is so wide that it is difficult to perform an extensive review, but for a good overview it is possible to refer to the work of Uslaner (2018). However, it is possible to distinguish direct and indirect measures of trust. In other words, direct measures means asking people for self-reporting. Indirect measures, on the other hand, are based on observation to detect expectations. Most of the work in measuring trust is performed by surveys plus additional methods such observation, interviews, focus groups. However, to measure the relation between trust and

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[4]https://www.oecd-ilibrary.org/sites/b407f99c-en/1/3/1/index.html?itemId=/content/publication/b407f99c-en&_csp_=c12e05718c887e57d9519eb8c987718b&itemIGO=oecd&itemContentType=book

policies several data are needed but existing analyses are based on limited data. As pointed out by Scrivens and Smith (2013), trust is one of the best available proxy measures of social capital, and better measures of generalised trust would make a very significant contribution to understanding social capital, its drivers and consequences. The point is that, being trust an intangible capital stock, it is difficult to measure. This makes urgent the definition of a direct measure of the size of the social capital stock and of how it changes over time. To overcome this issue, the proposal is not to look at trust per se but link the concept of trust to other variables. In this case, the link to be explored is the relation between trust in institutions and the media ecosystem.

The challenge is in the definition of a methodological framework that could be multidimensional and context based. Trust, indeed, cannot be analyzed without specific analysis of the context. In line with this, the proposed methodology provides four dimensions of impact to connect trust in media with trust in institutions. The framework is based on the following dimensions: i) the level of trust in media ii) the level of trust in institutions and quality of decision-making process iii) level of civic participation and iv) Impact on opinions and behaviors.

2.2.1 Trust in media

The methodology intends to explore the trust in media investigating the relation with trust in institutions. The assumption is that social media is a powerful tool to debate political issues, and being highly affected by disinformation, it has a high impact in affecting people's understanding and awareness of policy and institutions. As stated by Tsfati and Cohen (2005), "*if we no longer trust the media also the trust on decision-making decreases as well as our capability to accept political decisions declines*". On the same line, Toff et al. (2021) stresses that understanding trust in news and how news media may be able to build trust is especially important in an increasingly digital, mobile, and platform-dominated media environment where more and more people rely on intermediaries, including search engines, social media, and messaging applications, to access and discover news. As more people spend more of their time using platforms – which often provide limited context on the sources of information displayed and where many do not recall the brands behind stories they have read (Kalogeropoulos et al. 2019) – there are considerable concerns about how such changing audience behaviours will impact attitudes towards news outlets that depend on trusting relationships with audiences. As also stressed by EBU (2022), in the era of social media, where disinformation spreads, it is essential to keep track of the trust of the audience. This is due to the fact that trust is perceived as a social responsibility for the public stakeholders. In fact, EBU has developed an ad hoc index to map trust around European countries for different types of media. According to the latest study published by EBU (2022), the Net Trust Index report 2022 says that social networks are the least trusted media in 31 out of 37 European countries. The study has compared the level of trust in social media with the one on Institution, the study confirms that they are equally low.

The aim is to collect evidence about the following dimensions:
- reliability of traditional media in reporting information about politics
- reliability of social media in reporting information about politics
- access to trusted information.

Just to make some examples of questions to be asked. Hereafter is reported a draft list of questions
- How much do you trust traditional media regarding information about politics?
- How much do you trust new media (social networks) regarding information about politics?
- How much do you rely on traditional media to create your own opinion on political related issues?

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- How much do you rely on new media (social networks) to create your own opinion on political related issues?
- How do you rate your capability to access trusted information?

2.2.2 Trust in decision making process

As highlighted by the OECD[5] "*a priority for governments should be to build a policy making process conducive to trust. Concerns over the undue influence of vested interests over decision making has led to increasing demands for more transparency and a greater commitment to safeguarding the public interest. Efforts to guarantee that the policy making process is open, inclusive and fair would improve the quality of policy decisions. A policy-making process conducive to trust is built on informed decisions using reliable and relevant information, that are in the public interest, and are carried out with high standards of behaviour*". Accordingly, the methodology suggests investigating how the citizens perceived the different moments of the decision making process, trying to map how the influence of disinformation impacts the trustworthiness of institutions and the decision making process.

The aim is to collect evidence about the following dimensions:
- trustworthiness of decision making process
- trustworthiness of politicians in maintaining promises and meet citizens' expectations
- inclusivity as an element of the decision making process

Some questions to be asked are:
- How much do you trust your national institutions?
- How much do you rate the level of transparency of the decision making process in your country?
- Do you think policy making is considering social inclusion?

2.2.3 Civic participation

The scientific literature about the role of citizens' participation for the health of democracy is wide. As written by Della Porta (2013) "*Normative theorists of participatory democracy have stressed the importance of involving citizens beyond elections (Arnstein 1969; Pateman 1970; Barber 2003). In sum, participatory theory promotes a 'direct participation of citizens in the regulation of the key institutions of society, including the spheres of work and the local community' (Held 1997), or 'the participation of citizens in the determination of the conditions of their associational lives, which presumes the authentic and rational nature of the judgements of each individual' (1997)*".

In other words, participation is essential in creating a virtuous circle. Indeed, thanks to the opportunities to be engaged in the debate, people are incentivised to trust and be more active increasing the effect of the participation. Della Porta (2013) makes an exhaustive description of the historical development of participatory democracy and reports about the main scientific contributions in this regard. In particular, Della Porta, using the words of Manin (1995) pointed out that "*participation (not only electoral) is considered essential for contemporary democracies, which gain legitimacy not only through votes but also through their capacity to submit decisions to the 'test of the discussion*". Under this dimension the aim is to understand how people feel engaged in the political debate, how they interact with institutions and how they participate in political discussions (online and offline).
Dimensions to consider are:

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[5] https://www.oecd.org/gov/trust-inclusive-policy-making.htm

- frequency of vote
- frequency of participation in political debate (online and offline)
- way in which the participation happen

Here an example of questions to be asked:
- Are you a frequent voter?
- Are you interested in the political debate at the national level?
- Do you participate in public manifestation or public political debate?
- Do you listen to political discussion on traditional media (TV, radio, journals)?
- Do you intervene in political discussion on new media (social network)?

2.2.4 Opinions and behaviors

As reported by Weeks et al. (2015) "*The growing prominence of the Internet and social media in contemporary society has coincided with gradually smaller segments of the population who actively engage with news and political information, while more individuals opt instead for nonpolitical or entertainment-oriented content (Prior, 2007). At the same time, there is evidence that individuals are becoming increasingly reliant on others in their online social networks for news recommendations and political information, and that their knowledge, opinions, and behaviors are affected by the information stream and social dynamics within these sites (Bode, 2015; Bond et al., 2012; Messing & Westwood, 2014; Turcotte, York, Irving, Scholl, & Pingree, 2015)*"**.**

Accordingly, the aim of the dimension is to understand how social media affects the opinions and to what extent they are able to change behaviours.

Dimensions to be assessed are:
- changing opinions through media exposure
- changing behaviour through media exposure
- changing preference of vote through media exposure
- assessment of debate's polarisation (online and offline)

For instance, some of the questions are the following:
- Do you think the political debate online is divided and polarised?
- Do you think the political debate on traditional sources is divided and polarised?
- How much information gathered online impacts your opinions?
- How much information gathered through traditional sources impacts your opinions?
- How much do you rate the direct engagement of politicians on social networks?

To summarize, in Figure 2 are listed all the dimensions that for the framework constitute crucial elements for the trust in institutions. The sense of the framework is that the perception of trust in the media and in the decision making process has an impact on civic participation and engagement and on people's opinion and behavior. Those two dimensions, clearly, reinforce the opinions on the media ecosystem and in the decision-making process as a circular process. Accordingly, to have a measure on the trust in institutions it is necessary to map all other dimensions and, in particular, how social media affects the above-mentioned variables.
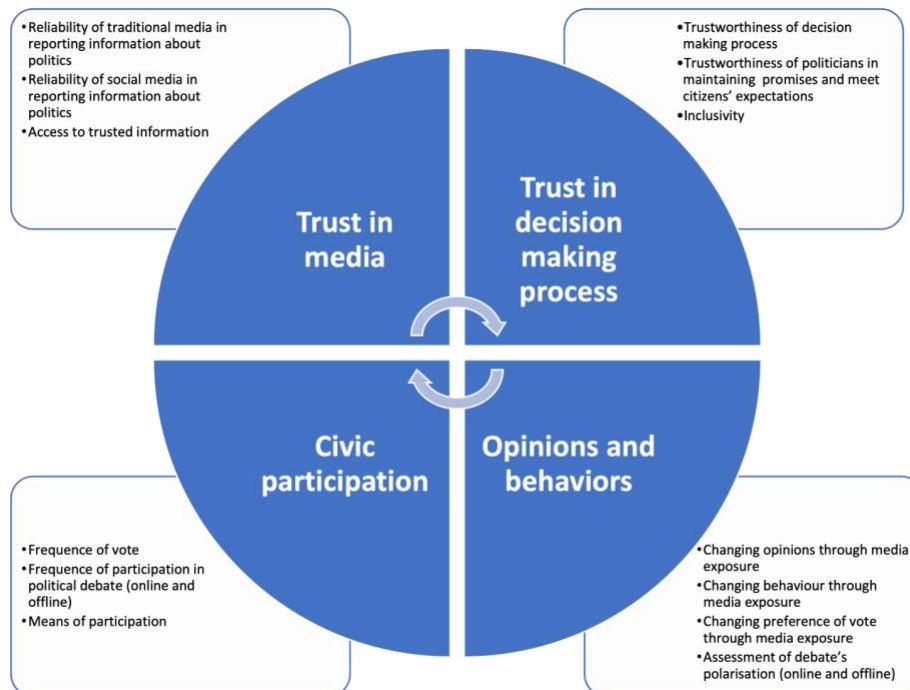
Figure 2. IDMO impact assessment methodology to measure impact of disinformation on trust

2.3 Data gathering and analysis to measure the impact of disinformation on trust

In order to allow a proper measure of trust, the authors reflected on how to implement the methodology to have a consistent framework for data gathering and data measurement.

The issues to be addressed are twofold. First is related to how build a tool for data gathering that will allow trust measure. Second is related to the creation of a tool that could consider that cognitive bias could affect the responses.

In terms of measurement, we decided to adopt direct measures through the creation of surveys. This method will gather direct responses to a set of questions. However, to maximize the results of the surveys, it is very important to define very clearly the questions. So, they will be structured according to the suggestions provided in the scientific literature. Bauer (2018), indeed, provides a specific set of suggestions to better calibrate the questions and avoid answers' confusion and dispersion. As reported, the suggestions are the following: "*First of all, the questions should be more specific and contain explicit references to single trustees or trustee groups that are sufficiently precise (e.g., "your parents and your siblings" instead of "family"). Second, questions should be more specific in that they explicitly refer to some kind of behavior X that truster A expects of a trustee B. The level of trust depends on the content of the trust "relationship." Third, we think that measurement would benefit if questions refer to a more concrete context Y. Finally, we suggest to elicit a subjective probability regarding whether a specified behavior by a trustee B in a context Y will or will not occur*". Accordingly, the questions for the survey will be drafted according to those criteria. Above all, the questions will be very specific to maximize response success rate.

Another element to be considered for both data gathering and analysis is the cognitive bias that influence how people interpret information. As highlighted by Nemr and Gangware (2019) one of the reasons why disinformation has an impact is because of psychological vulnerabilities in the way people consume and process information. In particular, the authors stress that among the most common people's behavior there is the desire to belong to a community. In this sense "*the nature*

of social media amplifies the choices people make in service to social identity and belonging because its activity takes place in a public forum". This aspect is related to what the psychologist Arie Kruglans defines as the cognitive closure. It means that it is a common attitude trying to belong to a social group but also to reduce the uncertainty around the comprehension of the world. Nevertheless, in the literature it is possible to find out other cognitive biases that influence how people interpret the world and consume information. "*For example, selective exposure leads people to prefer information that confirms their preexisting beliefs, while confirmation bias makes information consistent with one's preexisting beliefs more persuasive. These biases interact with, and complement, two other types of bias: motivated reasoning and naïve realism*" (Nemr and Gangware, 2019). Motivated reasoning means to apply higher scrutiny to unwelcome ideas that are inconsistent with one's ideas or beliefs using motivated reasoning to further their quest for social identity and belonging. On the other hand, naïve realism is particularly relevant to be understood in the context of our study as it pushes people to have a perception of reality where they are the ones with an accurate vision of the world, while all the others are irrational or they are manipulating information.

To avoid the perils of the cognitive biases, the survey should be structured to contain the danger of getting biased responses considering the percentage of responses that will be affected both from motivated reasoning and naïve realism.

The authors are aware that those and other issues could emerge in the data gathering process. This is why the methodology will be better refined once the topic of investigation is defined. On such bases, also the community of investigation will be deeply explored in order to map what kind of biases we can expect. All information will feed into the development of the survey to reduce the barriers and maximize the responses.

3   Methodological considerations and conclusions

Once that we clarified how the methodology was built, let us briefly describe the workflow implementing the methodology developed in the previous section.

The methodology will be applied to a specific topic related to a political issue to explore a thematic discussion that affects government and institutions. For instance, it could be a discussion on migration or the discussion on the adoption of specific laws. In both cases, the assumption is that users engaged will be interested in political considerations and it will also be possible to ask insights on trustability and reliability of the institutions.

Data for social network analysis will be initially retrieved by Twitter, due to its relevance for the public debate. The dataset will be analyzed according to the indicators described above in section 2.1. In parallel, a structured survey will be shared with all the accounts that are under investigation in the social network analysis. The survey will be based only on closed questions and the questions will reflect the dimensions described in section 2.2. Survey's results will be collected and analyzed through the use of statistical software such as SPSS. After the data gathering phase both for the survey and SNA, results will be combined in a common discussion to respond to the main research questions.

Given the impact assessment framework, some considerations are needed to contextualize how the authors foreseen the methodology implementation.

First of all, the approach intends to test the combination of social network analysis with other methods of investigation to have a deeper view on the relationship between media and trust. Secondly, the focus on trust aims at exploring a dimension which is very affected nowadays and urgent to be investigated. Finally, the methodology intends to create general measures to quantify trust to be applied also in different contexts.

As a matter of fact, the authors of the framework already identified some possible shortcomings of the methodology.

First, as already mentioned in Subsection 2.1, we will start focusing on Twitter, for its relevance on political subjects (even if the total number of registered accounts is lower than in other platforms) and for its data availability (more complete that in other OSNs). Nevertheless, the recent change of property of the platform generated some turbulence in Twitter and even some Twitter standards (for example, the verification of users) were revised. Therefore, we intend to modify and adapt our analysis to other OSNs, given their data availability, and/or to the final version of Twitter, if required by our analysis.

Secondly, sharing the survey through Twitter direct messages (or analogous chats for other platforms) it could be possible to have a low level of response. To guarantee a sufficient number of answers, we will start from a large number of users. If numbers should be low, we will define a method to survey people off Twitter to enlarge the pool.

To conclude, further reflections on methodological approaches to better quantify the impact of disinformation are still needed. In the case of the IDMO methodology, the authors are currently discussing the opportunity to test the methodology on a specific topic relevant for the Italian political debate to adequate both social network and survey. Tests will allow better calibration and modification of specific indicators. Results will be shared via IDMO website and social media accounts.

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Abbreviation List

AGCOM	Autorità per le Garanzie nelle Comunicazioni
AI	Artificial Intelligence
DSA	Digital Service Act
EC	European Commission
EDMO	European Digital Media Observatory
EEAS	European External Action Service
EP	European Parliament
GDPR	General Data Protection Regulation
HLEG	High Level Expert Group
IDMO	Italian Digital Media Observatory
IRI	Infodemic Risk Index
NLP	Natural Language Processing
OSN	Online Social Network
SOMA	Social Observatory for Disinformation and Social Media Analysis
SSO	Social Science One

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