Irving Fisher Committee on
Central Bank Statistics

Communication on central bank statistics: unlocking the next level

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Executive summary

Many central banks have recently taken important steps to **strengthen the communication of their statistics**, aiming at increasing their outreach to a broader audience and enhancing their value to better support information users.

These initiatives have underlined **three main points**. First, statistical communication is a key element for maximising the value of the data produced by central banks. Second, it is also an important ingredient supporting the effectiveness of their policies, with due consideration for the fact that data collected for statistical purposes should be protected from other needs. And third, communication effectiveness depends crucially on the degree of statistical literacy in the public; central banks can play an important role in addressing this point, for instance by making statistical content easy to understand, practising plain language, avoiding over-simplification and motivating the diverse user groups to engage with statistical information (data and metadata) and expand their knowledge.

Despite ongoing efforts, **the communication of statistics remains a constant challenge**, reflecting in particular the difficulties posed by new information sources, the increasing need for granular insights and the competition of alternative, sometimes poor-quality data. Fortunately, central banks appear well positioned, building on well-established credibility, visibility and trusted independence. They are also making substantial progress, especially in establishing a dedicated statistical communication function, identifying and selecting specific audience targets, crafting tailored content, using various (traditional and new) dissemination channels and leveraging technical innovation. A key objective is to foster user engagement with, and understanding of, central bank statistics.

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First, a statistical communication function is typically set up to **address both internal and external users**. Success will often depend on defining clear priorities and objectives and on ensuring good cooperation with subject matter experts as well as with the main communication department of the central bank. Moreover, there is merit in following a structured approach to designing a comprehensive framework comprising all the various building blocks that constitute the "communication ecosystem" – eg the related information sources, audiences, channels and required multidisciplinary skills.

Second, **a one-size-fits-all approach has clear limitations**. To be effective, communication should reach out to and engage with different groups, consider their distinct needs and be tailored to their various levels of sophistication and knowledge. Central bank statisticians are indeed already following different approaches when communicating statistical information, depending on the specific user groups considered (such as the general public, researchers, students, journalists).

Moreover, central banks are also **developing new communication channels** in order to reach out to the broadest possible audience. This calls for making the most of the wealth of data they have available, including granular data, and for using all media opportunities, especially social media.

Lastly, central banks are **leveraging innovation** to enhance their statistical dissemination methods and address the most pressing challenges. For instance, they are developing single "open source" data portals to strengthen their communication, by making data more accessible and enhancing users' experience. They are also exploring new ways to share very granular information without compromising confidentiality. And they are mobilising techniques based on artificial intelligence (AI) to support a wide range of tasks, from identifying user types to offering customised solutions that are tailored to specific user needs and degrees of literacy. In particular, the recent progress observed in the field of natural language processing (NLP) and large language models (LLMs) is providing important and promising new opportunities to strengthen central banks' statistical communication.

1. Introduction

The statistical teams of many **central banks have recently taken important steps to strengthen their communication function**. The various actions involved include identifying and targeting specific user groups through tailored content, examining and selecting relevant dissemination channels, adopting the relevant technology and setting up specific teams with diverse skill sets to be responsible for this function.

These initiatives have taken place **in the context of a greater focus on data governance** to ensure the quality of the production of official statistics and also to enhance their use. Communication is an essential element to consider in this context, since a key objective is to ensure that the data produced are fit for purpose to address user needs and that their public value is maximised (IFC (2021)). In particular, and in line with the Fundamental Principles of Official Statistics (UN (2013)), one should strive for clarity and transparency to ensure "*trust of the public in the integrity of official*

statistical systems and confidence in statistics".[2] To this end, statistical content has to be "*compiled and made available on an impartial basis (…) to honour citizens' entitlement to public information*".

Three main issues related to statistical communication

The above considerations raise three main issues: (i) statistical communication is a key element for maximising the value of the data produced by central banks; (ii) it is also an important ingredient supporting the effectiveness of their policies; and (iii) its effectiveness depends crucially on internal and public data literacy.

First, regarding data production, communication is a key dimension to consider, not least to promote the value of the statistics compiled by official statisticians (Andrei et al (2014), UNECE (2018)).[3] It is also essential for bridging the gap between statistical producers and their clients, as emphasised by Ana Paula Serra (Banco de Portugal). This is particularly relevant for central banks, which in many countries have the responsibility to produce statistics in certain subject areas, such as monetary and financial statistics, balance of payments statistics and financial accounts. Their statistical departments can therefore play a crucial role in disseminating economic and financial information to the public. They have in recent years taken various initiatives to develop a communication strategy, producing specific content tailored to pre-defined audiences and taking advantage of a diversified range of channels.[4]

The second issue is the contribution of statistical communication to policymaking (Bartsch (2011)). Besides being important producers of official statistics, central banks are also policy institutions that have an interest in sharing, in the most clear and understandable way, a comprehensive picture of the analyses supporting their decisions, including the degree of uncertainty associated with the data and the techniques used (Kapetanios et al (2021)). Communication has indeed become a central element of central banks' public mandates (Blinder et al (2008), Draghi (2014), Weidmann (2018)), in a context characterised by the growing importance of evidence-based policies (Buch (2019)) and the powerful role played by numbers in this regard (Dilnot (2012)).

However, and as stressed in the Fundamental Principles, statistics should be presented "*according to strictly professional considerations, including scientific principles and professional ethics*". This **calls for strong professional independence**, not least to ensure that the data used to support policies are relevant, science-based and free of purposeful political bias (Habermann and Louis (2020)). In fact, one important factor supporting the sheer value of official statistics, relative to any other statistics or data, is that they come from a "*trusted information source that is independent from any policy or other interests*"; this is a key "*difference induced by the Fundamental Principles*" (UNECE (2018)). Hence, a major challenge is how to secure

[2] One telling example is the code of practice for official statistics in the United Kingdom, which explicitly aims to ensure the publication and communication of statistics "*in a way that inspires public confidence*" (UK Office for Statistics Regulation (2022)).

[3] Giovannini (2008) argues that communication is "a key function that can determine the success or the failure of an official data provider".

[4] In line with international recommendations regarding the communication strategy of statistical organisations (see UNECE (2021)).

the professional independence of the statistical function from policy actions to avoid any loss of trust and perceptions of potential conflicts of interest. While national statistical offices (NSOs) in many countries are independent of government, this issue may be particularly relevant for statisticians in central banks – as well as in administrative statistical services participating in the national statistical system, such as state ministries. It is therefore crucial to differentiate the collection of data for statistical purposes from their use for policy purposes.[5]

From this perspective, it is essential to reassure the public that **data collected for statistical purposes are duly safeguarded** and follow high-quality standards, not least to protect confidentiality (Križman and Tissot (2022)).[6] Clarifying this point, the European Central Bank (ECB) states, for example, that strict rules are followed to produce statistics that "*are accurate, consistent, timely, and produced in line with international standards without any outside interferences*" (ECB (2016)).[7] In addition, the ECB has been surveying European citizens for their attitudes and opinions on a number of key communication aspects, such as the level of public trust (ECB (2022)).

The third issue relates to the target of statistical communication, as its effectiveness depends crucially on the level of economic literacy in the public (see Rahman (2018) for an analysis in the central banking context). Communication is not just about publishing numbers; it is also about putting them into perspective, as argued by Pablo García Silva (Irving Fisher Committee on Central Bank Statistics). For instance, analysing economic indicators such as gross domestic product (GDP) calls for an understanding of the way the statistics have been compiled as well as the complex factors that drive them and their real-world implications – underscoring the importance of providing information about the data themselves (metadata). Moreover, a key duty for official statisticians is to facilitate *"a correct interpretation of the data*", as stated in the Fundamental Principles. Reflecting these points, statisticians have been developing various initiatives to present information in a more straightforward manner and promote transparency, especially by providing context to the numbers published (UNECE (2013)). They have also recognised that publishing raw numbers is not sufficient, and that more needs to be done to help analyse the statistics produced and transform them into knowledge that can appropriately support users' decisions (Drozdova (2017)). This calls for adopting a user-friendly data ecosystem that ensures the disseminated statistics are well understood by their

[5] Central banks' statistical activity is often a by-product of their supervisory functions. While this role is typically clarified in the law of the central bank, an important point is to provide assurance that the official statistics for which the central bank is responsible are subject to provisions equivalent to those contained in the national statistical law or the UN Fundamental Principles (UNSD (2022)).

Nevertheless, central banks can be well placed to provide trusted statistical information, because they are independent and because the production and communication of statistics are important elements of their public accountability (Ittner and Schubert (2011)). In addition, various elements can contribute in practice to secure the professional independence of their statistical function, such as the public announcement of statistical release dates, the adequate adaptation of the statistical output to serve journalistic needs, the focus on communicating data and data analysis without drawing policy conclusions, etc (Seltzer (1994)).

[6] For example, the IMF Data Quality Assessment Framework states that "decisions about dissemination (…) are informed solely by statistical considerations" (IMF (2012)). Similarly, the *United Nations National Quality Assurance Frameworks Manual for Official Statistics* has been developed with the ultimate goal of ensuring trust and the quality of official statistics across the entire national statistical system (UN (2019)).

[7] The ECB Statistics Quality Framework contains the key principles and a practical framework for the work of its staff in the area of statistics (ECB (2008)).

consumers. As an illustration, and as argued by Qiu (Federal Home Loan Bank of Atlanta), the following actions can be useful to facilitate the use of statistics by the general public:

- **Make information easy to understand**. While statistics are based on precise and complex concepts, they have to be made accessible and comprehensible for general users. This calls for communicating in a non-technical manner, explaining and providing context to the disseminated numbers (eg by developing narratives or visualisations) and addressing interpretation errors. Moreover, more is not necessarily always better, and there is value in focusing on communicating clear and useful content and avoiding excessive noise in the statistics (Dale et al (2008)).
- **Practise plain statistical language**. Central banks have to "speak the language of the public" (Ittner and Schubert (2011)). Certainly, defining what is "plain language" is subjective, as it depends on the profile of the users. This means that statisticians should analyse the reactions of specific target groups and constantly check whether they can explain something more simply (but without compromising accuracy).
- **Avoid over-simplification**. One important challenge is that over-simplification can lead to misperceptions if the audience is not aware of or does not realise the assumptions made. Central banks should therefore find the right balance when facilitating the interpretation of the data while preserving the accuracy of the content being disseminated. A feasible solution is to communicate through well-identified, knowledgeable intermediaries like professors and financial journalists. Another is to engage with users in an interactive way, so as to receive feedback on how the communicated statistical content is being perceived and refine it if necessary. And a third aspect is to differentiate among user groups, for instance by identifying the more advanced ones who could benefit from more sophisticated analyses.
- **Motivate people to learn how to use statistics**. While many consumers of data are not interested in understanding the related methodology, it is essential that they are aware of how to correctly use this information. In a way, the situation is akin to drivers willing to know how to drive safely without being drawn into the technical details of their cars.

Addressing the new challenges posed by the information revolution

Despite ongoing efforts, **the dissemination of statistical information remains a constant challenge**. This reflects in particular the difficulties posed by new data sources, people's declining attention to traditional media and the need to secure (restore?) public confidence in a world increasingly marked by "alternative facts" and "fake news". For instance, greater public attention to poor quality and potentially misleading data poses the risk of driving good statistics out of policy debates (Cœuré (2017)). In this context, central bank communication has to continuously adapt to the changing information landscape and "cut through" to the wider public (Lagarde (2023)).

To shed light on these aspects, the Irving Fisher Committee on Central Bank Statistics (IFC) of the Bank for International Settlements (BIS) has taken **several initiatives in recent years to review the evolution of central banks' statistical**

communication and identify actions for improvement. For instance, a recent survey organised among IFC members showed that almost all of them are proactively developing communication initiatives as a complement to their statistical production work (IFC (2023a)). While central banks are not alone in this field, they appear well positioned, not least in terms of credibility, visibility and trusted independence. But they are also perceived to be somewhat outdated when disseminating statistics, especially with respect to the use of advanced visualisation tools to communicate statistical content effectively.

In addition, the **IFC co-organised with the Banco de Portugal its first conference dedicated to the topic of "Communication on central bank statistics: unlocking the next level"** in September 2022. One goal was to share experience on how to start a statistical communication function in terms of targets, channels and content and to create the team in charge of related tasks. Another objective was to reflect on reaching and engaging with different target groups, with a focus on the various channels available. This event was an opportunity to take stock of the new perspectives facing the communication of central bank statistics – especially to enhance their promotion, address users' evolving needs and develop statistical literacy among the diverse stakeholders involved – as well as the challenges that remain. About 30 institutions from 25 jurisdictions were represented at the event. Their contributions, as referred to in this overview and included in this *IFC Bulletin*, discussed how to set up a statistical communication function serving both internal and external users (Section 2), identify adequate external audience targets (Section 3) and dissemination channels (Section 4), and make the best use of the opportunities provided by technical innovation (Section 5).

2. Unlocking the communication function

The nature of statistical communication

A concrete issue for central banks establishing a statistical communication function is how to start. This will first depend on **the preferred form of dissemination envisaged**, as central banks can typically communicate statistical content in both an active and a passive way, depending in particular on the profile of data users in the specific countries considered. A passive approach will relate to the simple dispatching of regular and dedicated publications on the website (this is often referred to as "one-way" dissemination). In contrast, active communication aims to be "two-way", by carefully taking into consideration user feedback. It is usually achieved by generating press releases, preparing ad hoc briefings, posting on social media and responding to queries. In practice, these approaches are deemed equally important and complementary by central banks. The setup of a communication function should thus address the specifics related to both aspects.

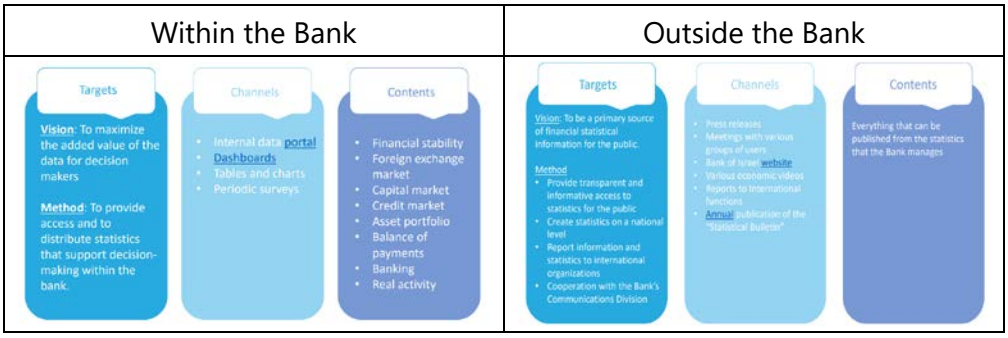
A second important consideration is the need to adopt a data strategy that addresses **internal as well as external recipients** of the information being disseminated, as highlighted by the example of the Bank of Israel (Graph 1). Regarding internal communication, a main objective is to maximise the value added of data by facilitating access to them within the Bank. To this end, statistics are disseminated via a dedicated internal portal that provides dashboards, tables, charts, etc to users. Turning to external communication, the goal is to be a primary source of

financial statistical information for the public. This calls for focusing on three critical aspects: accessibility, flexibility and transparency.

A third important point is that the nature of statistical communication pursued by central banks will often **depend on specific circumstances**, for instance in a crisis (Ittner and Schubert (2011)). One telling example was during the Covid-19 pandemic, when many institutions faced "statistical darkness" and realised the importance of strengthening their communication on the state of the economy (de Beer and Tissot (2021)). To monitor the situation more effectively, the Bank of Israel decided to centralise statistics in a unified location, strengthen the dissemination of more timely and frequent indicators and make use of new business intelligence tools (IFC (2019)). Similarly, Banco de Portugal decided to develop a dedicated web page to present the most pertinent statistical data available at the time of the pandemic.

Internal and external communication at the Bank of Israel

Graph 1



Source: H Gotsman (2024): "Unlocking the function: where to start?", *IFC Bulletin*, no 60, March.

Organisational aspects

The actual organisation of a statistical communication function can take several forms. A number of central banks have decided to create a specific unit in charge of this task, often located in statistical departments. One important benefit is to allow a close involvement of subject matter experts in communication initiatives. However, setting up a dedicated function separated from the main unit in charge of corporate communications can have notable drawbacks (eg resource impact, potential duplication of skills and reduced synergies). It can also lead to the development of communication silos and raise reputational risk if the overall activities of the central bank are perceived as uncoordinated. Reflecting this trade-off, the approach followed by central banks is often hybrid, with the statistical communication function typically shared between the two departments in charge of statistics and corporate communication.

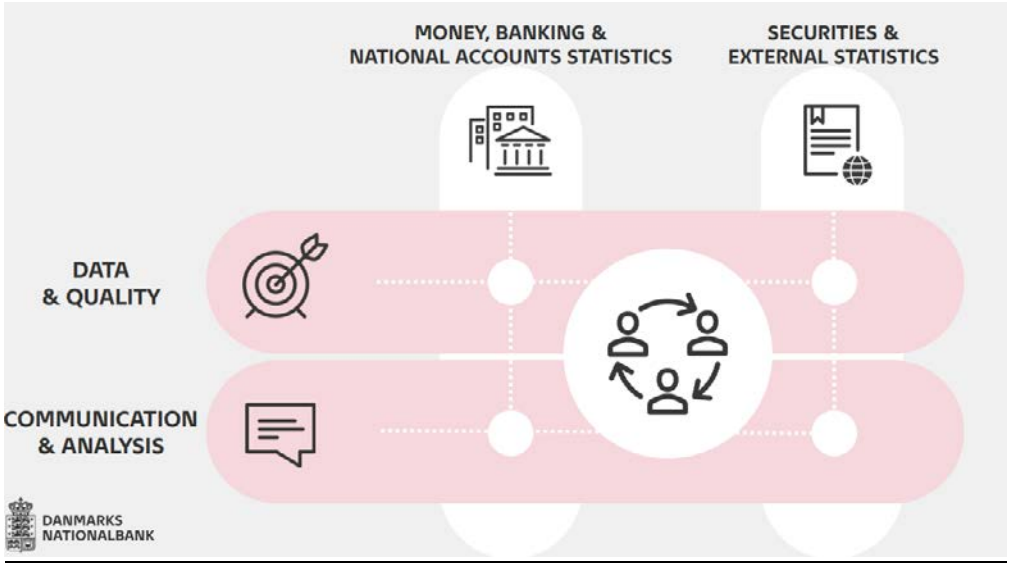
Whatever the organisational set up, how should one proceed in practice to organise statistical communication activities? Based on its experience, the Danmarks Nationalbank has identified **the following "keys" to consider**:

- **Prioritise communication**. A key starting point is to recognise that producing statistics is not sufficient if their value is unknown. This calls for a cultural shift within the institution and a willingness to allocate more resources to the dissemination of statistical information, hire staff with specific competencies and ensure that everyone understands the importance of communication.

- **Set up a visible function in charge of statistical communication**. Each of the divisions producing statistics should not be left alone to manage the dissemination of their data. There is merit in establishing a common unit in charge, for instance, of responding to users' incoming inquiries and organising communication activities.
- **Favour internal mobility**. Facilitating the transition of statistical experts to the statistical communication function is essential to promote synergies and staff development. This requires adequate training, in particular in written and visual communication.
- **Define clear communication objectives**. Statistics departments should carefully analyse user feedback to identify information needs and adapt their communication accordingly. This also calls for flexibly adjusting to an environment often characterised by uncertain and changing customer preferences.
- Develop a matrix organisational structure to **ensure that subject matter experts are working together with the communication function** (Graph 2). The key is that staff in specific statistics areas (eg monetary statistics, external sector statistics) are associated with the various communication initiatives, for instance when working on the presentation of the data in a user-friendly way. Collaboration should also involve other internal stakeholders, such as economists in research and policy departments (especially for producing analytical content) as well as experts in the main communication unit of the central bank (which is also increasingly relying on internal data analytical capacities these days). This collaboration can be facilitated by the design of a well-defined governance framework that clarifies the various processes and responsibilities involved, for instance for the production of press releases.

A matrix organisation structure to support statistical communication

Graph 2

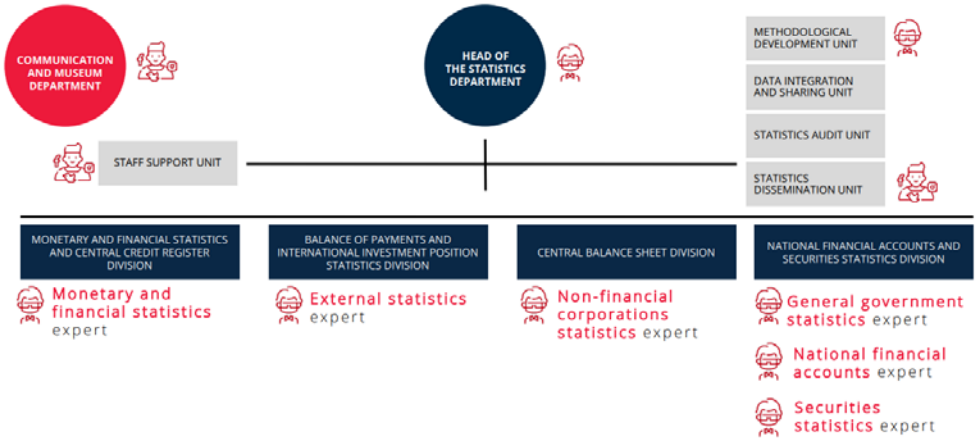


Source: R Mandsberg and L Risbjerg (2024): "Developing the statistical communication function at Danmarks Nationalbank", *IFC Bulletin*, no 60, March.

Denmark's experience described above resonates with **the situation faced by other central banks**. For instance, the statistics department of the Banco de Portugal, established a communication-focused team a few years ago. The initial intention was to recruit specific external skills (eg web design, marketing), with the view that business experts can excel in deciphering and analysing data but may be less effective in presenting and promoting them. However, this option was limited by budget constraints, and the statistics department decided to creatively harness available resources. A distinct communication unit was established by restructuring staff resources internally, supported by selected experts from each statistical division, forming the "StatsComm Team" (Graph 3). These business contact points benefited from regular training sessions, for instance on writing concise texts and leveraging social media. In parallel, a close partnership was set up with the central bank's communication department, which has been closely associated in the development of statistical communication plans and the analysis of user feedback and website traffic. Turning to the Central Bank of Iceland, it has decided to build a dedicated function comprising individuals from diverse departments and possessing varied expertise, which is responsible for formulating and executing the communication strategy.

The StatsComm Team at Banco de Portugal

Graph 3



Source: L Nunes (2024): "Together we make it better: how a multidisciplinary team unlocked the statistical communication function at the Banco de Portugal", *IFC Bulletin*, no 60, March.

Designing a comprehensive framework

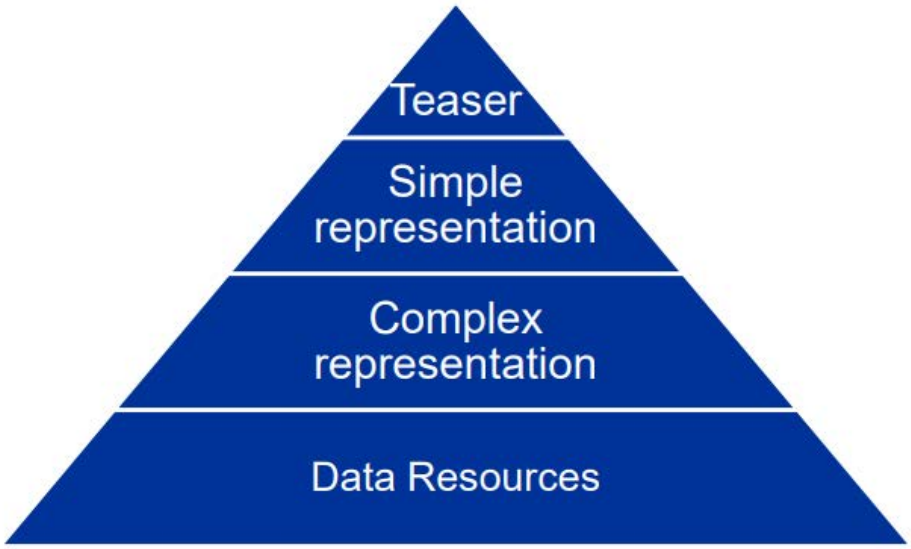
Central banks' experiences highlight the **importance of following a structured approach when developing a statistical communication function**. A key reason, as observed in the case of the ECB, is that a "communication ecosystem" relies on a number of complex factors, especially regarding the users, channels and skills involved. Addressing these multiple aspects can be facilitated by the design of a comprehensive framework, with four main focus points:[8]

[8] In addition, it may be useful to rely on a "communications maturity model" approach to help statistical organisations gauge their current communications maturity and to propose areas for improvement (UNECE (2021)).

- **Resources** – the different channels involved and the various skills required for communicating statistical content have to be clearly assessed.
- **Communication channels** – there are different ways to disseminate statistical information. This calls for adopting a clear information hierarchy to set up the level of details that are appropriate given the audience targeted (Graph 4). Communication can be very generic, for instance to address common data requests by providing well-established reference material – eg press releases, statistical publications, data portal and (micro) dashboards, frequently asked questions (FAQs), "hot topics" on the website. It can also be highly tailored, to answer specific questions (eg for supporting internal policy users) or to allow users to explore the information in a self-service way. In any case, good collaboration is essential when developing these channels, in particular with business units to craft relevant "narratives" and with the central department in charge of the broader communication strategy of the institution.

The information hierarchy supporting ECB statistical communication

Graph 4



Source: M Rumpf (2024): "Building an ecosystem for statistical communication", *IFC Bulletin*, no 60, March.

- **Target audiences** – all the various groups of users of statistical information need to be carefully identified. While a key focus group relates to internal data users, such as research and policy units, central banks are also increasingly considering the large variety of external audiences, comprising the general public, journalists, policy observers and specialised users (eg financial market participants, data vendors), researchers, students, etc (see Section 3).
- **User information needs** – the communication of statistical content should fundamentally be two-way, ie by proactively engaging with users and being responsive to their needs. A comprehensive framework can help monitor the usage of the communication tools and collect user feedback in a structured way (eg to analyse logs on the website, traffic in social media, etc). It can in turn facilitate the design of specific communication responses, for instance by crafting new material, linking statistical content, redirecting requests or adapting language and terminology. One practical example of such a two-way

communication strategy was the initiative by the Bank of Israel to leverage innovative technologies to monitor and prioritise its communication channels and better align with user needs.

3. External communication target groups

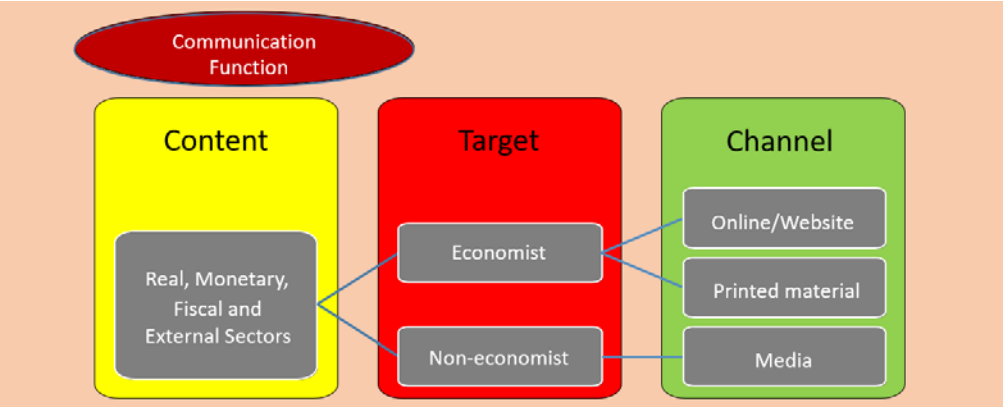
The limitations of a one-size-fits-all approach

In the past, most of the statistical information for external users was uniform: it was typically prepared for experts, as the general public was not considered a top priority; and it was often based on written documentation, with a lack of visual material. Such a one-size-fits-all communication approach, however, has clear limitations. **To be effective, communication should reach out to and engage with a variety of different groups**, consider their distinct needs and be tailored to their various levels of sophistication and knowledge.

Indeed, **central banks' communication channels have clearly evolved in recent years** to better address the diversity of their target audiences. To this end, the Bank of Italy has, for instance, identified four types of user personas representing consumers of statistical information, namely unskilled users, skilled users, students and economists. The State Bank of Pakistan has also taken steps to target audiences in a more precise way, for instance by mobilising census data to take into consideration factors such as education, gender, income, language and economic activity. These efforts have been complemented by specific actions tailored to the diverse audiences. The dissemination of generic printed materials has been progressively complemented by various actions to target media outlets, strengthen the Bank's website, organise business and household surveys, engage more actively with specialised users such as economists, professionals and journalists, and, more recently, embrace social media platforms such as X (formerly Twitter) and Facebook (Graph 5). Lastly, the central bank has focused on developing more user-friendly language and infographics.

Addressing the one-size-fits-all "communication tragedy"

Graph 5



Source: S H Javaid (2024): "One size does not fit all: target matters", *IFC Bulletin*, no 60, March.

The non-specialised audience

Reflecting their policy mandates as well as their role as producers of official statistics as "public good", **a key audience for central banks is the general population**. Communicating in plain language is particularly important for this audience, not least because of its limited understanding of the technicalities involved in the production of statistical information. Yet, the notion of "plain language" can mean different things across target groups and over time.

To address these issues, **the Bank of Canada has launched an initiative to "help users think with data"**. The starting point was the recognition that people tend to place greater trust in recommendations from friends. This suggests that communication can become more effective if one can stimulate inclusive conversations, akin to friends having a coffee together. Another objective is to put suggestive content into raw numbers, by making creative comparisons to concrete phenomena so as to provide a "sense of scale" – for instance, by visualising what an amount of money represents in terms of banknotes piled-up together. Furthermore, storytelling can help transform numbers into clearer narratives, supporting the understanding of complex technical issues.

These communication initiatives have also been accompanied **by a greater focus on improving the public understanding of economic and financial concepts** (UNECE (2009)). The objective is to allow individuals to make more informed spending and investment decisions, in turn contributing to overall economic well-being. The central bank can make a key contribution to this endeavour, not least because it is responsible for producing an important part of the financial information available to the public. For instance, the Bank of Albania actively supported the setup of the national financial education strategy in that country, where economic literacy is relatively low and can vary significantly across population groups. The aim was to educate individuals about financial concepts, products and services through a combination of targeted teaching and communication initiatives. Similarly, the Central Bank of Malaysia has set up a strategic plan to foster financial inclusion that explicitly seeks to improve economic literacy in the country's population.

Lastly, an important aspect supporting statistical communication with the general public is to **facilitate the interpretation of the data** by making use of innovative techniques such as dashboards and predefined tables (see Section 5 below). A central concept from this perspective is "data curation", which relates to the creation, organisation and presentation of a curated view of the data so that they can be easily accessed and used by (unskilled) users looking for information.

Students

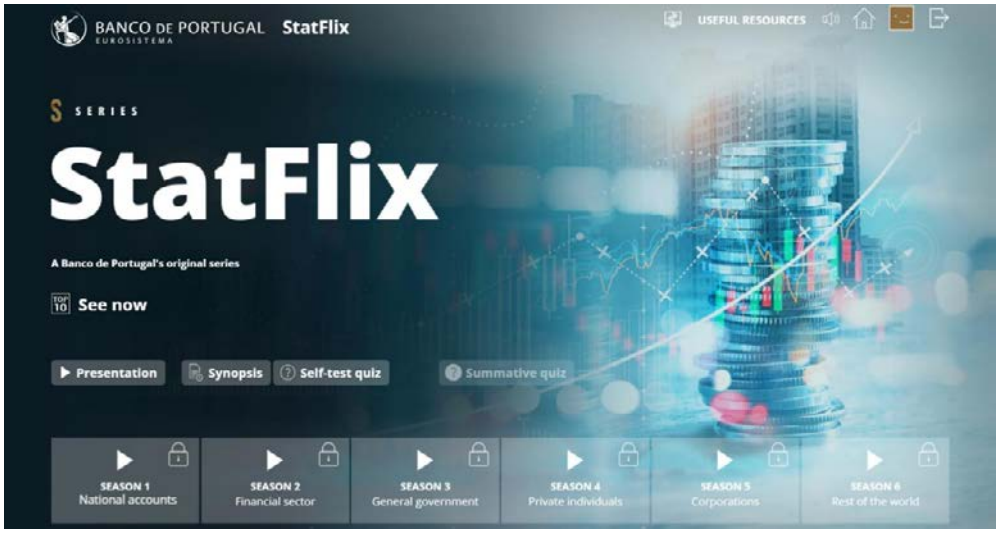
Another **important target audience for central banks is students**. Their degree of understanding of statistics is typically higher than the general public but lower than more professional data users. Moreover, students present important challenges due to their diverse fields of interest, their different levels of education and, obviously, their large numbers.

In this context, **the Banco de Portugal has set up an initiative focusing specifically on university students**. It developed a dedicated e-learning course to present the main statistical concepts and access the data available on the central

bank's statistical website, BP*stat*. This called for close collaboration with a wide range of stakeholders, including economics schools, experts in digital learning and of course the various units of the central bank, eg its management and the most interested departments (communication, economics, statistics, international relations). A key achievement was the release of "Statflix", designed as a TV series encompassing different seasons focusing on a statistical topic (eg national accounts, financial statistics). Each learning sequence comprises an initial quiz to gauge students' familiarity with a particular topic, an interactive video, a flipbook, a podcast and a final quiz at the end (Graph 6).

Statflix: the Banco de Portugal initiative targeting university students

Graph 6



Source: M Trincão (2024): "Statflix: a Banco de Portugal original series", *IFC Bulletin*, no 60, March.

(Semi) professional users

There is merit in focusing in a relatively detailed way on the **wide range of users that consume data because of their professional (eg financial market participants) or semi-professional (eg key politicians or well-known academics) activities**. For instance, the ECB has conducted in-depth interviews with specific categories of professions when designing its new data dissemination strategy (Graph 7).

Financial journalists can be of particular importance from this perspective, reflecting their multiple roles (UNECE (2021)). They are in particular (i) influencers (eg press commentators); (ii) scrutinisers (eg observers of central bank decisions; Koop and di Vettimo (2023)); (iii) knowledgeable intermediaries (eg specialists to facilitate the general public understanding of complex issues)[9]; and (iv) trusted stakeholders (eg media with whom the central bank has built or wants to build relationships not least to convey policy messages (Bezoska (2018)).

[9] For more on the role played by media specialising in financial affairs with respect to the average citizen, the educated public and the central bank, see Blinder et al (2001).

Considering the large variety of professional and semi-professional data users

Graph 7

Source: K B Simon and J A Sánchez Hernández (2024): "ECB Data Portal – making statistics accessible in a fast pace digital world", *IFC Bulletin*, no 60, March.

Reflecting the above, the Central Bank of Pakistan has set up dedicated training facilities for media journalists. Similarly, the BIS has worked on defining a typical data user journey for journalists in order to enhance its statistical dissemination strategy. As noted at the Bank of Italy, a key need of these users is the ability to easily and rapidly download graphs and tables to support the writing of news articles.

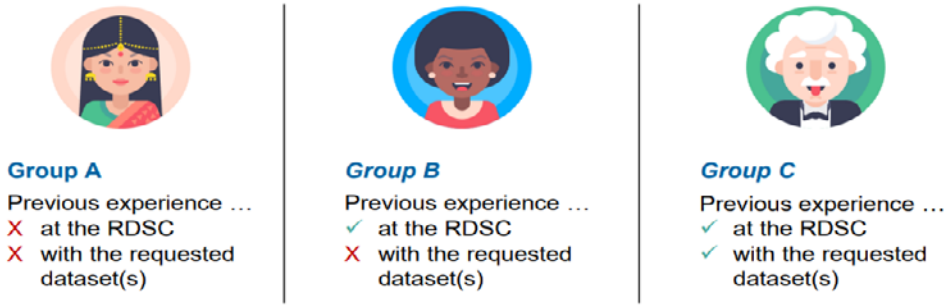
Researchers

One group of users receiving increasing attention are **academic researchers, who are typically knowledgeable about the data and how to use them**. This audience is relatively similar to the internal users of the statistics, who are typically the economists in charge of supporting policy and research activities within central banks.

The central banking community has been increasingly focusing **on improving its statistical offering for external researchers**, for instance in the context of the related work conducted under the aegis of INEXDA (the International Network for Exchanging Experience on Statistical Handling of Granular Data). This initiative has comprised various actions to develop a metadata schema describing granular data sets, identify data access procedures and review best practices targeting the specific audience of researchers (IFC (2018)).

One concrete example relates to the **project by the Deutsche Bundesbank to facilitate the access for non-commercial research to micro data sets that can be highly sensitive**. Several approaches can be followed for this purpose, for instance by granting on-site access to researchers, giving access to anonymised "scientific use files", or remotely executing programmes in a controlled way (based on the codes provided by researchers). Furthermore, the Bundesbank provides specific resources to assist researchers in terms of documentation, information technology (IT) packages, etc. It also engages actively with users to better assess their needs in more detail, for instance by identifying who they are in terms of their experience and degree of understanding of the related statistical issues (Graph 8).

WHO?: Defining the research target audience at the Bundesbank Research Data and Service Centre (RDSC) Graph 8



Source: C Hirsch and J Blaschke (2024): "How to tailor information resources to a target audience – lessons learned from a Research Data Centre", *IFC Bulletin*, no 60, March.

4. Developing new communication channels

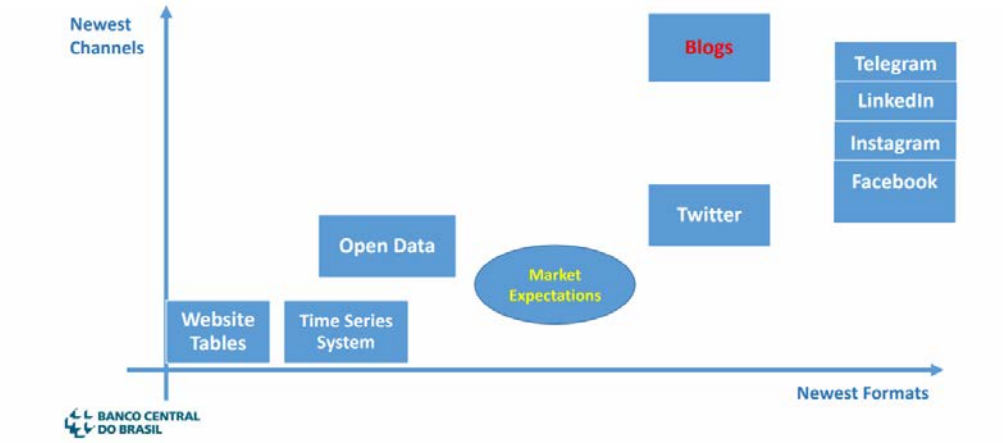
The objective: reaching out to the broadest possible audience…

The cornerstone of the communication of central banks' statistics departments is the actual dissemination of economic and financial data. As reported in the case of Brazil, all the various actions taken to embrace novel communication tools, refine outreach strategies and develop innovative data products have the purpose of disseminating statistics better (in terms of availability, serviceability and timeliness). A case in point relates to the large range of business intelligence tools (eg dashboards, interactive graphs, infographics) that have become available in recent years to support data communication across various groups and channels (IFC (2019)). Yet the choice of the "right" communication approach should consider a large range of factors such as efficiency and cost-effectiveness, the appropriateness for the targeted users and the possibility to reach a broader group (Graph 9).

Such analysis can be key to **selecting the visualisation tools that can make it easier for the target audience to understand the data** (see Carson (2009) and Ten Bosch and de Jonge (2008)), the use of a certain type of words (eg plain language for the general public versus more technical terms for sophisticated users), and the choice of the actual information content conveyed to the users depending on their degree of statistical literacy. These choices can be helped by a thorough review of the public's demand for information. For instance, De Nederlandsche Bank conducted an extensive survey of its users' preferences, which highlighted the need to provide narrative explanations supporting the disseminated figures and also a more comprehensive overview of the array of the statistical products available.

Statistical channels and formats at the Central Bank of Brazil

Graph 9



Source: F Lemos (2024): "New channels, new approaches, new data formats", *IFC Bulletin*, no 60, March.

…by making the most of the wealth of data available…

Central banks have also realised that they sit on a wealth of data that are not fully exploited, despite significant potential interest among internal and external user groups. A case in point relates to the vast amount of micro data available as a by-product of administrative and economic activities, such as granular payment transactions, financial prices observed in specific market segments, individual responses to firm and household surveys, etc (Israël and Tissot (2021)).

One telling example is the initiative of the statistics department of De Nederlandsche Bank to provide more insight on the mortgage market – which has traditionally been a source of great public interest in the Netherlands – by developing several dashboards built around specific themes and making use of various micro-level sources. This initiative faced a number of challenges, especially regarding the resources to be mobilised for setting up the data sets and publishing them; the required technical knowledge, for instance for developing visuals (eg use of the interactive charting software Highcharts); the related external dependency aspects; the different types of information, especially in terms of consistency and comparability; the quality of the newly exploited data sets; and the privacy, confidentiality and legal issues posed by the use of such very granular information.

Another important objective is to **facilitate the dissemination of more granular information by developing new types of indicators** that can help put isolated numbers in a broader context. For instance, the Reserve Bank of India has developed comprehensive fan charts to better convey the degree of uncertainty surrounding specific indicators. The objective is to provide more comprehensive information, allowing users to better understand the precision of published forecasts, the risks involved and the importance of the relationships between certain phenomena.

…and using all media opportunities…

The direct dissemination of information organised by institutions like central banks can be **usefully complemented in a more indirect way through the use of the main means of mass communication**, such as newspapers, TV networks or the internet. An obvious reason is that people are dedicating an increasing amount of their time to consuming media content. This trend has been reinforced by the fact that, over time, traditional mass media have become more personalised "self-media", arguably providing additional benefits in terms of familiarity, active user engagement and individual control.

What can help central banks effectively navigate this increasingly competitive and changing media landscape? As recognised at the Banco de Portugal, **the selection of a media platform is a fundamental decision** that should be aligned with the overall strategy of the central bank. A number of important factors have to be taken into consideration when making such a choice:

- **Suitability of the selected media for the audience targeted** – this calls for a thorough analysis of the characteristics of the target audience in terms of, for example, demographics, preferences and behaviours.
- **Relatability** – the media should be able to convey messages that are easy to understand (eg accessible and visual) and relatable to people's everyday lives (Gardt et al (2021)). This can be challenging when dealing with statistical concepts, and it calls for creating innovative content that can better resonate with users. The selected media should therefore adequately support the choices made in terms of communication language, formats and techniques.
- **Analytics-driven and two-way approach** – the media should convey insights based on data, which is the primary objective of statistical communication; in turn, metrics on users' behaviour and engagement should be available so as to refine communication initiatives.
- **Variety** – it is useful to explore a diverse range of media before deciding to select those that resonate better with the target audiences.

…including social media

It is estimated that about 60% of the world population is using social media, and this number continues to grow over time, especially among young individuals that are increasingly turning to such platforms when looking for specific information (instead of using the internet, for example). This development is raising increasing interest among central banks, as it is in other statistical agencies such as NSOs (Glăvan et al (2016)). Indeed, **the recent survey organised by the IFC shows that central banks' use of social media has risen remarkably over the past decade and is expected to progress further** in the coming years (IFC (2023a)).

A main objective has been to **establish a formal presence on selected social media platforms**, not least to be able to engage with a more diverse audience. The aim is, first, to make better use of social media opportunities to foster a sense of community and interaction among targeted users. And second, the objective is to get feedback from them to refine the content of statistical communication. This calls for carefully analysing social media usage and developing adequate metrics for monitoring, as emphasised by Paulo Rossas (Lisbon Digital School). A starting point

is to identify the motivations of social media users, ie if they are looking for entertainment, learning possibilities, social interactions or to make purchases, for example. Another important point is to assess their degree of "engagement", ie how users interact with the content of the social media of interest – whether they "like" it, the comments they make and the actions they take to share specific news with other users.

In practice, **a large variety of indicators can be used for monitoring purposes**. Users' interactions can be measured by counting the number of "shares", "comments" and "likes" generated by a given post. In turn, users' engagement can be assessed by comparing the interactions generated by a given social media post with the overall number of people that have actually seen it. Specific metrics can also be used for analysing website usage, eg in terms of "time on site", "page views", etc. Furthemore, the identification of specific user profiles, such as "lifetime engaged users", "followers" or "retweeters" can be useful to target specific audiences, for instance to identify "influencers" and "opinion leaders".

5. Leveraging innovation

Central banks are actively reviewing their **statistical dissemination methods**, identifying current limitations and developing ways to address them. The main focus points reported are the reliance on static statistical products with little user interaction, the complexity of current data ingestion procedures, and users' difficulties in identifying, locating and accessing published content on the website.

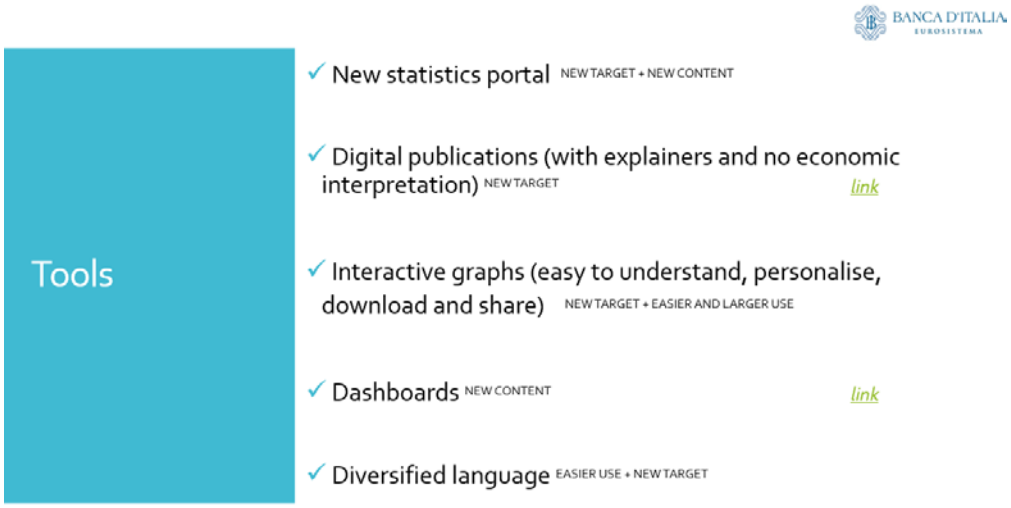
IT innovation can be helpful to address these challenges, especially if it can be shared with the wider data community. As highlighted by the recent initiative developed by the Bank of Italy, **the objective is threefold**: (i) make statistical information more accessible to a broader audience, particularly individuals with limited statistical knowledge and also potential users; (ii) improve the ways to access and analyse the data disseminated by the Bank; and (iii) solidify the Bank's relevance and reputation in the statistical domain by keeping pace with the most advanced national and international peers. The approach relied heavily on innovative IT techniques, with a focus on providing a variety of tools to users of all levels, from the unskilled to the more sophisticated: digital publications, interactive graphs, dashboards and, last but not least, a statistics portal (Graph 10) – that is, an online platform that allows users to access, modify and reuse in an open way the statistics made available by the central bank.

Data portals

Reflecting the Italian example, central banks are increasingly taking action to **develop single data portals to both strengthen their communication and enhance users' experience**. The aim is to provide the public with a consolidated platform presenting data from different sources and with a dedicated web application, unified statistical tools and channels, as well as a proper organisation of statistical information (data and metadata) to guide data discovery and exploration. The approach is typically holistic, with the portal intended to serve as the primary access point for all types of users so that they can easily search and find the information they need.

Tools for statistical communication at the Central Bank of Italy

Graph 10



Source: L Bartiloro (2024): "Innovating statistical communication in Banca d'Italia", *IFC Bulletin*, no 60, March.

A related initiative developed at the BIS shows that **a useful way to organise a data portal is to focus on three dimensions – how to discover, access and present the statistics** (Graph 11).

The BIS Data Portal project

Graph 11

Source: E Lambe and T Park (2024): "The BIS Data Portal project - delivering the next generation platform for BIS statistics", *IFC Bulletin*, no 60, March.

One key issue was to set up an effective "search" function within the portal. Another important consideration was to target different types of personas (general public, journalists, researchers, students, statisticians) and reach out to a broad range of diversified social media (from business platforms such as LinkedIn to image-sharing networking services such as Instagram). Another issue is the potential trade-off between two different goals. On one hand, a data portal can allow central banks to make freely available all the wealth of data that they can produce as public goods

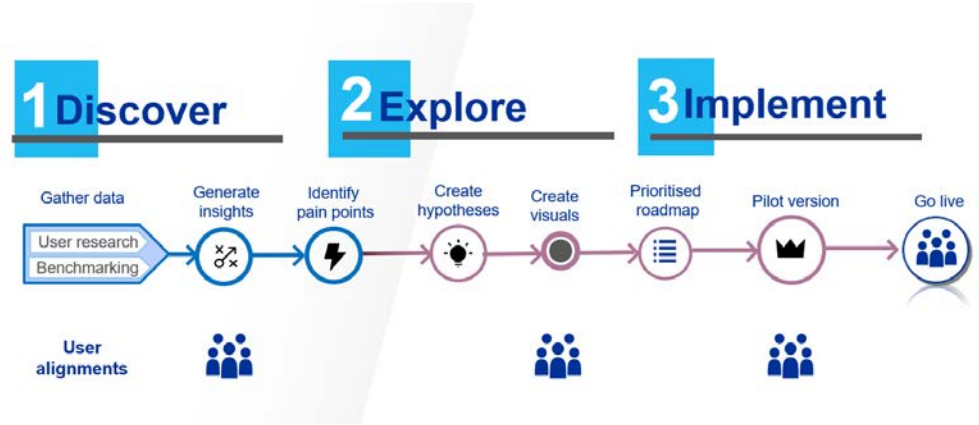
that can be accessed, exploited, edited and shared by anyone ("open data"). On the other hand, a data portal allows for providing a selected and educated ("curated") view of the complex data available so as to facilitate a user's journey. For instance, the BIS has been working on making available so-called "publication tables" in its new data portal.[10]

In practice, how should one proceed when deciding to develop a data portal that properly meets user needs and efficiently supports the overall statistical communication of the institution? The ECB has identified **the following three phases to consider** in a comprehensive way (Graph 12):

- **Discovery phase** – the aim is to thoroughly examine the preferences and requirements of the various user types, ranging from the general public to professional users. One useful approach followed by the Central Bank of Iceland has been to organise interviews with different target groups. Another is to conduct a benchmarking exercise to learn from existing projects, best practices and challenges encountered.
- **Exploratory phase** – this stage should be devoted to selecting the data to be published, designing the portal tools and visual features, testing with users and subsequently refining the project based on their feedback.
- **Implementation phase** – this would typically follow a roadmap outlining the development and deployment timeline in several steps, from the creation of a pilot version to the public launch of a fully ready portal.

Developing a data portal: three phases

Graph 12



Source: K B Simon and J A Sánchez Hernández (2024): "ECB Data Portal – making statistics accessible in a fast pace digital world", *IFC Bulletin*, no 60, March.

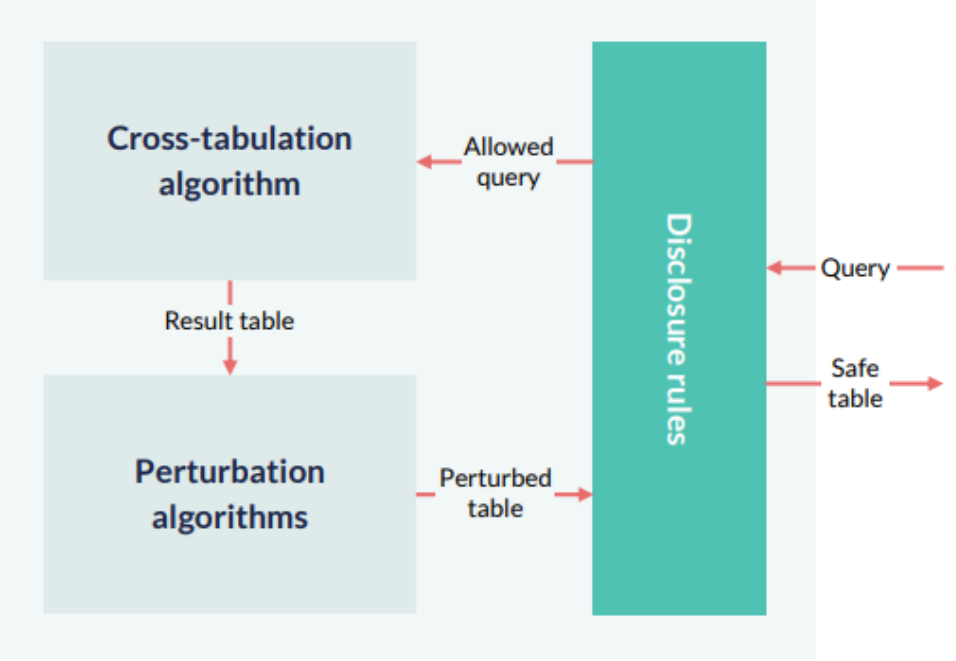
[10] A publication table is defined as "a curated table of data, where the values in the table rows, columns and table body cells can be individually specified". It "enables a single table to pull data from multiple sources and piece the data together in a way which is not possible when dealing with standard cubes of data" (see E Lambe and T Park (2024): "The BIS Data Portal project - delivering the next generation platform for BIS statistics", *IFC Bulletin*, no 60, March).

Using new technology

One of the most sophisticated use cases faced by central banks relates to sharing very granular information without compromising confidentiality. Technology can help address this need, as shown in the dissemination service of census results developed by The Sensible Code Company for the NSO in the United Kingdom. The objective was to enhance the communication of granular insights, with the ability for users to create personalised outputs (eg customised tables) according to their specific needs and interests (Graph 13). Cross-tabulation and perturbation algorithms were used to anonymise the information, and the NSO's control through automated disclosure checks ensured that the dissemination of the data adheres to requested privacy and security standards. The tool also incorporates automatic checks, allowing for earlier data releases while reducing the likelihood of errors.

Disclosing micro data insights while protecting confidentiality

Graph 13



Source: M Thompson (2024): "Flexible dissemination software for the 2021 England and Wales Census", *IFC Bulletin*, no 60, March.

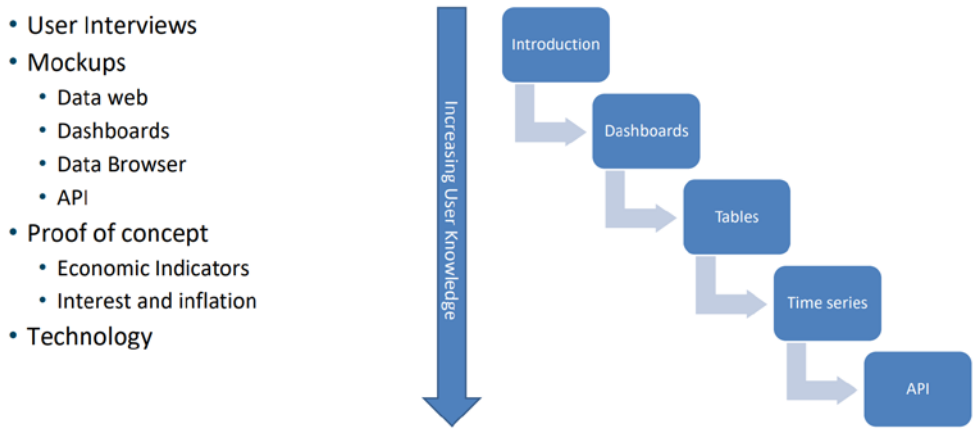
AI techniques can also be mobilised for statistical communication in central banks (Araujo et al (2024)). These techniques may support a wide range of tasks, from identifying user types to offering customised solutions that are tailored to their specific needs and degree of literacy. Thus, one strategy followed for strengthening statistical dissemination has been to collect user feedback and set up prototype mockups based on the type of technique that is best suited for addressing identified target groups.

For instance, the Central Bank of Iceland has been using the Power BI platform to **develop interactive graphs** for key economic indicators as a way to enhance data accessibility and user engagement. The approach followed has been sequential, with

the development of more sophisticated tools depending on the degree of user knowledge (Graph 14). The offering comprises simple dashboards as well as more complex applications supporting the retrieval of time series and selected interfaces, allowing users to interact with the central bank system through a dedicated application programming interface (API).

Strategy for disseminating data by leveraging technology

Graph 14



Source: B Þ Gíslason (2024): "Accessible digital economic indicators at the Central Bank of Iceland", *IFC Bulletin*, no 60, March.

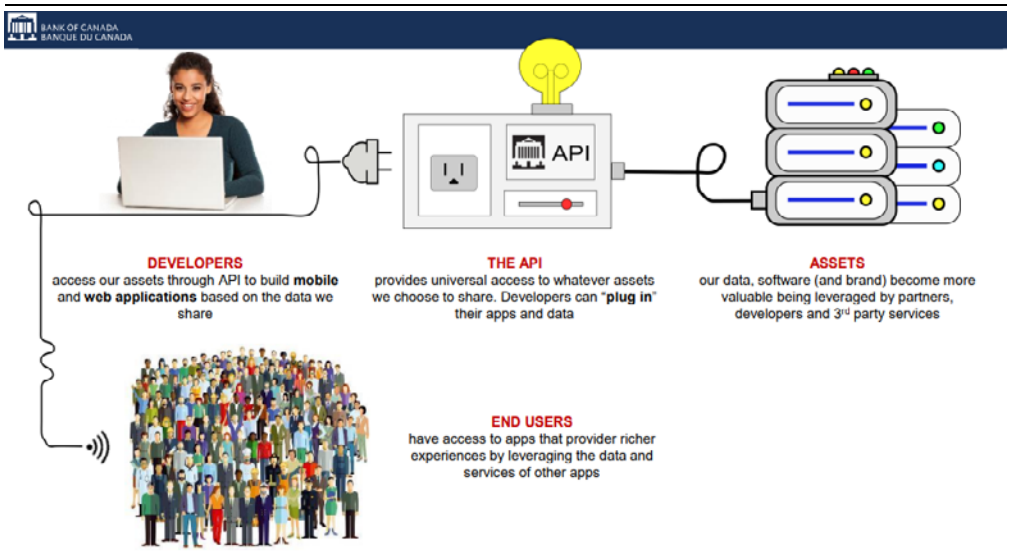
Similarly, the Bank of Canada has **developed a user interface** – its Valet Web Services API – that facilitates users' access to the Bank's statistical offering, for instance to automatically retrieve financial data series (Graph 15).

New communication **opportunities also arise from the significant progress observed in the field of NLP** (IFC (2023b)). For instance, the Reserve Bank of Australia has used an NLP model to analyse how various audiences perceive communication quality in terms of the degree of readability and reasoning attributed to the messages published, depending on the types of audience considered (Huang and Simon (2023)). Another approach followed by Bank Indonesia aimed to capture public opinion, as expressed on social networks, on issues related to central bank activities (Jabbar et al (2023)).

Furthermore, a key recent development is the **breakthrough provided by LLMs such as ChatGPT** – the language model developed by OpenAI that is capable of generating text based on context and past conversations (Araujo et al (2023), UNECE (2023)). Some central banks have already started deploying LLMs in various tasks supporting the external communication of their statistics, especially to handle inquiries from the public or financial institutions or to explain complex topics. LLMs might also assist in offering training possibilities for the broader financial community and the public at large, by making complex topics more accessible, enhancing financial literacy and supporting data queries through more intuitive interfaces.

Accessing data through an API-based user interface at the Bank of Canada

Graph 15

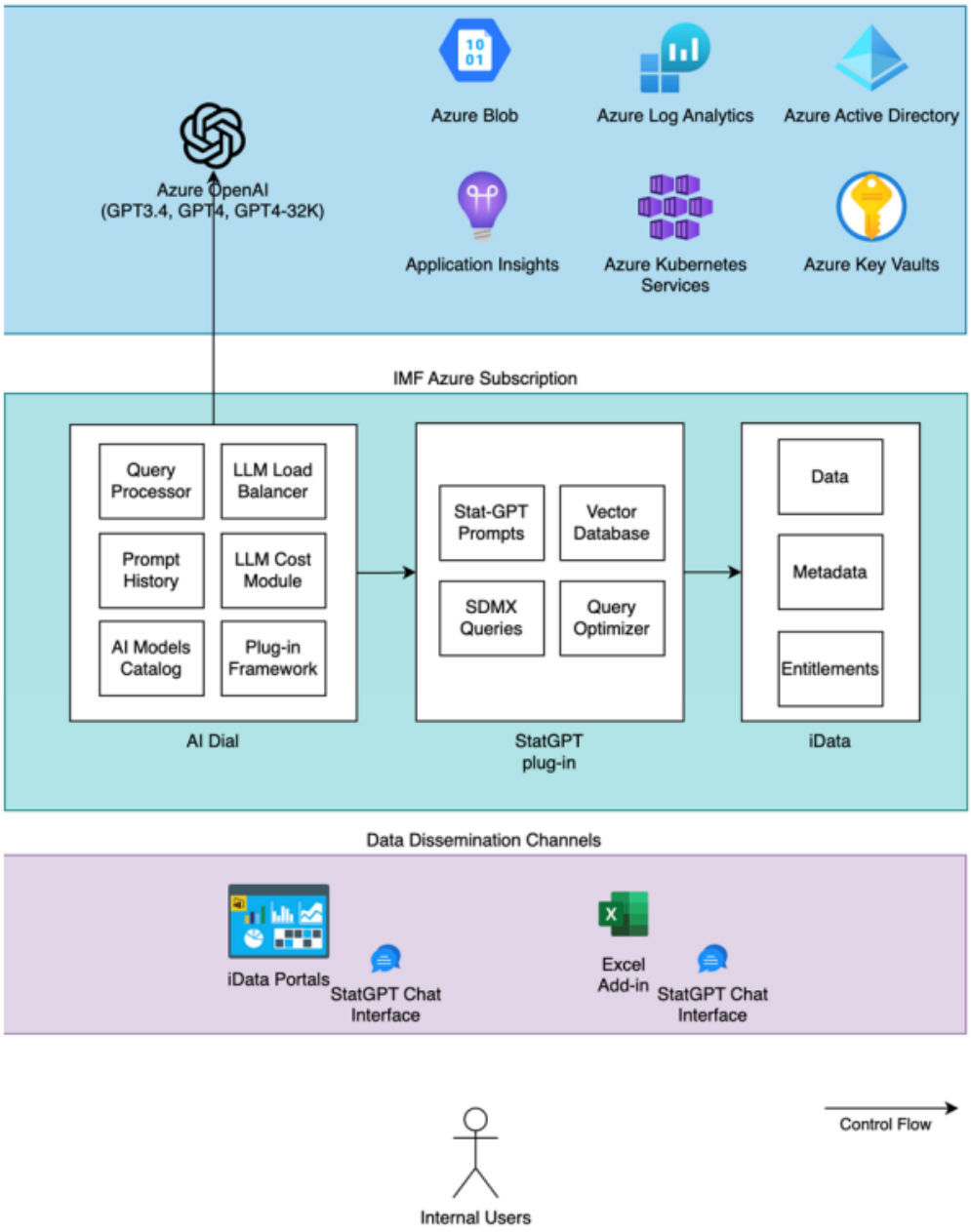


Source: A Geraghty (2024): "Helping users think with data: statistical communication at the Bank of Canada", *IFC Bulletin*, no 60, March.

One telling example is the International Monetary Fund (IMF) StatGPT project to modernise its statistics processing and dissemination platforms. The project relies on the use of generative AI to establish better search and browse capabilities, in turn enhancing the user experience and quality of the analysis (Graph 16). Yet, one difficulty, common to AI-based applications in general, is that data insights cannot be communicated as a "black box" and require transparent explanations to the users.

The IMF StatGPT project

Graph 16



Source: UNECE (2023): *Large language models for official statistics*, HLG-MOS White Paper, December, pp 31–7.

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