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Items for discussion and decision: data science

Report of the 10-year review on the use of Big Data and Data Science for Official Statistics

Prepared by United Nations Statistics Division

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Executive Summary

In March 2014, the UN Statistical Commission supported (in Decision 45/110) the creation of the United Nations Committee of Experts on Big Data and Data Science for Official Statistics (UNCEBD, formerly called the UN Global Working Group on Big Data for Official Statistics). The mandate of UNCEBD is (i) to provide a strategic vision, direction and coordination for a global programme on big data for official statistics, (ii) to promote practical use of big data sources, while finding solutions for many challenges (methodological, legal, security), (iii) to promote capacity-building, (iv) to advocate the use of big data for policy applications, and (v) to build public trust in the use of big data for official statistics.

On behalf of UNCEBD, the United Nations Statistics Division (UNSD) conducted a survey of the 10-year review on the use of Big Data and Data Science for Official Statistics. All national statistical offices (NSOs) and international organizations (IOs), under the Statistical Commission, were invited to participate in the online survey. 87 NSOs, of which 57 from non-OECD countries, and 15 IOs completed the survey. In addition, 41 interviews were conducted with UNCEBD members and with partners from private sector and academia.

The survey and interviews formed the basis for the preparation of recommendations to improve the work of the UNCEBD, which focus on updating its mandate and structure, including the terms of reference and operations of task teams, hubs, and committees. After 10 years some updating and streamlining are needed. Whereas the original mandate of UNCEBD refers heavily to "big data" in recent years the focus of NSOs has shifted to the broader use of "data science".

Survey

The survey questions were structured according to the main components of the generic activity model of statistical organizations (GAMSO), namely strategic vision, legislation, institutional arrangement and partnerships, data sources, methodology and quality assurance, communication and stakeholders consultations, human resources, and IT management. For each of those areas, questions were posed related to big data, data science and modernization in general. Some of the striking results are the following.

- Almost 4 out of 5 NSOs have explicitly incorporated references to modernization, innovation, data science, and the use of alternative data sources, such as big data, into their strategic agendas.

- Access to private sector data together with protection of data privacy are main priorities in the innovation strategies.

- Correspondingly, more than 4 out 5 NSOs have updated or are in the process of updating their statistical legislation to facilitate access to privately held data.

- About half of NSOs and IOs are actively developing data science capabilities in their

institutes.

- Almost 4 out of 5 NSOs have a roadmap to develop capacity in new areas, such as data science, data engineering or similar.

- Whereas most NSOs have gradually upgraded their IT infrastructure, only about half of them have started using Cloud services.

- About 2 out of 3 NSOs have not yet participated in the UNCEBD task teams (or in the international conferences on Big Data), but all are interested to participate in at least one of the task teams.

Interviews

The topics of the interview questions were the mandate and value proposition of the UNCEBD, the Terms of References of the task teams and the Memorandums of Understanding (MOUs) of the regional and global hubs, the UN Global Platform and the communication of the UNCEBD through its website or conferences. In addition, interviewees were asked about the strategic vision of their organization, its adaptability and working with new data sources.

Mandate and value proposition of the UNCEBD

The mandate is perceived as valid but dated by the majority of the interviewees and could be aligned with contemporary data realities by going beyond just 'big data', and including 'modern methods' and 'statistical algorithms', and also more actively involving the private sector.

In its value proposition, there seems to be a prevalent perception that the benefits of big data are overemphasized, which some feel is overshadowing important methodological and statistical concerns, leading to a perceived disconnect between the envisioned goals and the real-world challenges faced by the entities. A more balanced approach addressing both the potentials and the methodological concerns of big data and a framework to translate discussions into actionable outcomes are recommended to make the mandate more effective and purposeful.

Terms of References of the task teams and MOUs of the regional and global hubs

The Terms of Reference of the task teams consist of the objectives, deliverables, time table, and key performance indicators, where the objectives are comprised of development of methodology, tools and training materials. The task teams produced over the 10-year period various handbooks and other guidance resources and delivered many training activities to staff of NSOs. They play a crucial role in translating the mandates of UNCEBD into actions by utilizing big data for a variety of valuable applications. However, there seems to be a need to recalibrate the offerings of the task teams with the needs of the NSOs.

The purpose of the MOUs of the regional and global hubs is to facilitate collaboration in innovation for official statistics and SDG indicators. The hubs will bring together innovative technology and data science methods in the use of big data and will provide a much-needed

platform to further the data science projects in the respective regions. The hubs are pivotal points for training and coordination, bringing the UNCEBD's initiatives closer to the NSOs.

In practice, there are challenges with communication in the statistical community and a need for more coordination with other (UN) regional organizations. The work of the hubs can be reinforced by partnerships with other NSOs, international organizations, academia, and the private sector to collectively navigate the challenges of effectively integrating data science in the work of NSOs. Especially, strengthening collaboration with task teams, other regional hubs, and the UN agencies is indispensable for avoiding redundant efforts and optimizing resource allocation.

The hubs have a pivotal role in making the shift from abstract, high-level discussions to more actionable, tangible outcomes that can be directly applied by NSOs, ensuring that relevant indicators are compiled and disseminated. This role as a center for training and resource service provision should be emphasized, tailored to the specific needs and contexts of the respective region or substantive domain (for the global hubs).

In conclusion, the evolution of the mandate and objectives, enhanced coordination, a focus on practical outcomes, and clarified role for regional and global hubs, and a holistic approach to collaboration are imperative for the continuing impact and relevance of UNCEBD's initiatives. It is essential that these elements are integrated cohesively to navigate the evolving landscape of data and statistics, balancing tradition and innovation, and fostering synergy among diverse entities in the ecosystem.

<u>United Nations Global Platform</u>

The UN Global Platform – developed jointly by ONS and the UN in the period 2018-2020 – is a groundbreaking cloud-based collaboration environment, offering data, methods, tools and services, primarily aimed at lowering the barriers for NSOs in developing countries to participate in big data and data science projects.

The platform is notably beneficial for providing comprehensive access to various data sources and is seen as an invaluable resource for NSOs. It meets training needs through effective e-learning systems, fosters collaboration, and allows diverse entities to store, learn, share, and collaborate on data.

However, reflections on its first few years of operation have identified critical areas of improvement and potential enhancements. Stakeholders have encountered complexities in accessing the platform and have expressed a need for a more user-friendly interface. There's a need for further discussion on the platform's principal function, be it as a provider of data, a space for data analysis, or for sharing of expertise. Moreover, further clarity is needed on collaboration with seemingly parallel platforms developed by the World Bank and others. Additionally, the quality and volume of data available need refinement, and concerns persist regarding the platform's longevity and stability.

To elevate the platform's functionality and user experience, and to harness its full potential,

enhanced communication strategies like regular briefings and newsletters, detailing the platform's offerings and purposes, are suggested. Increased visibility, perhaps through regional promotions and detailed documentation of its features, is also crucial. Improved integration, more API integrations, and the introduction of advanced services can contribute to a seamless user experience and active computation and storage. A more inclusive and diverse approach would empower the platform to tackle global challenges more effectively, and long-term assurances are desired to guarantee continuity and stability of the platform.

In conclusion, the UN Global Platform, with its extensive data access and collaborative benefits, holds immense potential. Addressing the current challenges and implementing suggested enhancements will not only refine user experience but also ensure that it continues to fulfill the diverse requirements of stakeholders globally, thus cementing its role as a linchpin in the global statistical community.

Communication

The UNCEBD website is a crucial communication portal. The website is valued but criticized for outdated information and navigational difficulties. It is in need of upgrading, for example, with the implementation of user experience tools and regular content updates to boost functionality and user satisfaction.

International conferences are recognized as vital for global collaboration and knowledge exchange. However, they were seen as too broad in scope and were raising environmental concerns due to travel. It was therefore recommended to host more theme-specific conferences with possible hybrid formats.

Current communication tools and strategies, incorporating platforms like Yammer, Slack, and direct workshops, are appreciated, but there's a prominent desire for more accessible and persistent channels of collaboration, such as newsletters and webinars. The scheduling of meetings presents concerns for stakeholders in specific regions, requiring attention to inclusive scheduling and improved communication about regular meetings to ensure global participation. Overlaps and consolidations in different efforts and conferences lead to redundancy; hence a unified approach prioritizing flagship events and clearer team communication is advisable.

Engagement strategies need diversification, suggesting broadcasting main events online and promoting success stories and case studies for better reach and impact. Active inter-organizational communication is emphasized, and suggestions include multilingual content and improved communication about available resources. By addressing these areas, UNCEBD can significantly enhance its communication efficacy, resulting in a more informed and collaborative global community in the forthcoming decade.

Strategic frameworks of statistical institutes

This segment of the interviews looked into the data innovation strategies being employed by NSOs and various international organizations. Organizations like Statistics Denmark and FAO

have developed explicit strategic frameworks that emphasize data-centric approaches, focusing on statistical advancements, microdata access, and data science. The FAO, for instance, has designed a three-pillar strategy that accentuates official statistics, data interoperability, and data science, symbolizing the holistic approach to data-centric organizational strategies that are commonplace among similar entities.

The emphasis on a data-centric vision is evident, with numerous entities striving to augment their capacities in data access, processing, and sharing. The integration of advanced data sources, big data, and data science techniques is seen as integral to the realization of these strategic goals, fostering community development through a "smart data strategy" that underscores granularity and timeliness.

Frameworks across organizations echo themes of innovation, modernization, and proactiveness, with a significant emphasis placed on integrated data ecosystems including statistical, spatial, and unstructured data. These frameworks are crucial in monitoring resources, especially in sectors like agriculture and the environment, reinforcing the drive toward creating adaptive, collaborative, and data-centric strategic frameworks.

Nevertheless, challenges in technological acquisition and skill forecasting remain substantial. The perceived dichotomy between the self-perception of official statisticians and government perceptions of their roles underscores a critical area for alignment and recalibration. Gathering diverse feedback, addressing the evolving nature of data science, and automation are crucial steps to ensure the adaptability and relevance of strategic frameworks. Continual reassessment, innovation, and adaptability are the bedrocks upon which the future of these strategic frameworks rests, emphasizing a collaborative, modernized approach and leveraging multifaceted data for the collective societal good.

Organizational adaptability of statistical institutes

Organizational adaptability has become paramount in the wake of unforeseen global events, such as the COVID-19 pandemic, underscoring the urgent need for agility and responsiveness within organizations. Smaller agencies, already grappling with resource challenges and budget constraints, find it particularly strenuous to align with new requirements. Despite such limitations, the imperative to be agile has led to a rapid modification in data collection and governance strategies across various organizations.

Within the realm of methodology and transparency, organizations are recognizing the importance of maintaining rigorous and transparent methodologies during time-sensitive projects. The integration of traditional and newer data sources presents methodological challenges, but consistency and cross-validation of narratives from multiple data sources have become pivotal. The innovation landscape is somewhat hampered by the traditionally rigid structures of organizations like the UN, with legal constraints and internal structures at times inhibiting the push towards modern technologies and innovative practices. However, some, including the OECD and ONS, have managed shifts towards data harmonization and have pioneered in the

implementation of big data solutions.

Collaboration and harmonization across various sectors and organizations have surfaced as crucial elements, shaping policies and resulting in cohesive integration of efforts from organizations, such as IMF, ADB, and UN Women. Successful partnerships, evidenced by initiatives between ONS and its partners, underscore the potential benefits of harmonization through the establishment of data science campuses and the initiation of collaborative projects.

Training and onboarding new technologies remain areas needing enhancement, with official statisticians often requiring additional effort and support. Even though training workshops are being conducted, the post-training uptake in some organizations is found to be lacking, indicating a need for more effective training methodologies.

In conclusion, there's a universal acknowledgment of the importance of agility, collaboration, and innovation within the broader statistical community. UNCEBD, perceived as more adaptable and explorative, needs to align its structures and methodologies to foster an environment conducive to learning and adapting, ensuring the uninterrupted flow of services and functions in changing global landscapes. It's imperative to fortify organizational adaptability, enhance collaboration, and foster innovation to navigate the evolving landscapes of data science and to respond efficiently to unforeseen challenges.

<u>Use of new data sources by statistical institutes</u>

The recent decade has marked a significant transition among UNCEBD stakeholders in embracing and integrating new and varied data sources, revealing a spectrum of experiences, potentials, and concerns. The collaboration with big tech and telecom companies, such as Google, is crucial given their expansive data reach, allowing mutual benefits to flourish, as witnessed in instances like Nigeria's SIM card registration initiative. Nonetheless, a discernable hesitancy lingers among some statistical offices, highlighting a pressing need to alleviate partnership barriers.

Emerging data sources, like mobile phone and spatial data, have been recognized as invaluable, assisting in events like census enumeration and pandemics, and gaining momentum in integration with more traditional forms, like surveys, for enhanced reliability and validation. A shift from solely relying on survey-based to registering diverse statistics is noticeable, emphasizing the utilization of data from administrative registers, geospatial infrastructures, and significant tech entities. However, enduring concerns about data privacy and the credibility of non-traditional data sources need addressing, alongside prevalent challenges related to accessing private sector data due to existing legislative constraints.

The focus on integrating various data sources has been consistent, underscored by voices like ESCAP, calling for resilient data governance systems. Innovation and adept training in leveraging these new data sources are imperative, and many entities are progressively exploring and experimenting with new methods and unconventional data sources.

Despite the interest in new data sources, some entities have not adopted them swiftly. Rising costs of commercial data and the emergence of specialized players are concerns. The vision for many is a synergy between various data sources and statistics, with a focus on areas like sustainability. Suggestions include establishing an open data set repository on the UN global platform and continuously engaging in discussions to learn from peers.

The last decade has seen a shift in data collection methodologies and data sources among UNCEBD stakeholders. While the use of new data sources offers benefits, the challenges related to privacy, access, and integration persist. Collaborative efforts, both within the public and private sectors, will be pivotal in harnessing the full potential of new data sources.

What does this mean for the future of UNCEBD?

The survey showed that statistical institutes are incorporating references to innovation, data science, and the use of alternative data sources, such as big data, into their strategic agendas, that access to private sector data together with protection of data privacy are main priorities in the innovation strategies, that they are updating their statistical legislation to facilitate access to privately held data, and that they are actively developing data science capabilities in their institutes.

In line with the survey results, the interviews indicated that the existing **UNCEBD mandate** is perceived as valid but outdated and that it should be aligned with contemporary data realities including use of data science and partnerships with the private sector.

With respect to the **UNCEBD task teams**, it was emphasized that they play a crucial role in translating the mandates of UNCEBD into actions by utilizing big data for a variety of valuable applications. However, the TORs of the task teams need to be recalibrated bringing the offerings of the task teams in line with the needs of the NSOs.

The work of **the regional and global hubs** can be reinforced by partnerships with other NSOs, international organizations, academia, and the private sector, including better collaboration with task teams and other regional hubs. The hubs have a pivotal role in making the shift from abstract, high-level discussions to more actionable, tangible outcomes that can be directly applied by NSOs, ensuring that relevant indicators are compiled and disseminated. This role as a center for training and resource service provision should be emphasized.

The **UN Global Platform**, with its extensive data access and collaborative benefits, holds immense potential. Addressing the current challenges and implementing suggested enhancements will not only refine user experience but also ensure that it continues to fulfill the diverse requirements of stakeholders globally, thus cementing its role as a linchpin in the global statistical community.

Communication can be improved. The UNCEBD website, although a crucial tool, needs user-friendly upgrades and consistent content updates. The role of conferences, while undeniable for networking, raises questions about redundancy and environmental concerns. The need for

streamlined communication tools and broader engagement mechanisms resonates deeply, highlighting the importance of newsletters, social media, and more focused content.

The emphasis on **a data-centric strategic framework in statistical institutes** is evident, with numerous entities striving to augment their capacities in data access, processing, and sharing. The integration of advanced data sources, big data, and data science techniques is seen as integral to the realization of these strategic goals, fostering community development through a "smart data strategy" that underscores granularity and timeliness. Nevertheless, challenges in technological acquisition and skill forecasting remain substantial.

There is a universal acknowledgment of the importance of **organizational adaptability**, agility, collaboration, and innovation within the broader statistical community. In a similar sense, UNCEBD needs to regularly update its mandate, structures and methodologies to foster an environment conducive to learning and adapting, ensuring the latest services and functions are offered, which can respond efficiently to unforeseen challenges.

The recent decade has marked a significant transition among UNCEBD stakeholders in embracing and integrating new and varied data sources, revealing a spectrum of experiences, potentials, and concerns. While the use of **new data sources** offers benefits, the challenges related to privacy, access, and integration persist. Collaborative efforts, both within the public and private sectors, will be pivotal in harnessing the full potential of these data sources.

Recommendations

The survey and interviews on the 10-year of the UNCEBD result in the formulation of several recommendations to make changes to the mandate and operations of the UNCEBD. These recommendations (proposed in the next section) will be presented to the Statistical Commission at its 55th session and, if supported, will be implemented during 2024.

Recommendations

I.   Updating the UNCEBD mandate

It is recommended that the mandate of the UNCEBD be updated. The exact wording of the updated mandate is still under discussion. A preliminary version of the new mandate is as follows:

> The mandate of UNCEBD is to provide strategic vision, direction and coordination for a global programme on the use of data science, Big Data and other alternative data sources for official statistics. Within this global program UNCEBD should:
> - conduct use cases, while facilitating data access and protecting data privacy;
> - develop solutions for many methodological, technical and legal challenges;
> - promote capacity-building activities;
> - promote partnerships with private sector and academia;
> - promote the integration of statistical and geospatial information;
> - develop communication strategies to maintain public trust.

II.   Updating the TORs of the Task Teams

It is recommended that the Terms of References of the task teams will be recalibrated by bringing the objectives and deliverables of the task teams in line with the needs of the NSOs.

III.   Strengthening the regional and global hubs

It is recommended that the regional and global hubs will strengthen their capacities and resources through partnerships with other government departments, academia, private sector, other NSOs and international organizations, including better collaboration with task teams and other hubs. UNCEBD should more widely promote the role of regional and global hubs as centers for training, capacity development and international collaboration in the use of data science, Big Data and other alternative data sources.

IV.   Improving the UN Global Platform

It is recommended that the UN Global Platform will continuously implement enhancements to ensure that it continues to fulfill the diverse requirements of the global statistical community.

V.   Improving Communication

It is recommended that the communication of UNCEBD will be improved through (i) user-friendly upgrades and consistent content updates of the UNCEBD website, (ii) improving the organization of the international conferences, and (iii) streamlining communication tools, such as newsletters, social media, and more focused content.

Survey and Interviews

The survey was circulated on 6 July 2023 to all NSOs and IOs under the Statistical Commissions with a deadline of 18 August 2023. The interviews were conducted either in person or by video call in the period July – August 2023.

Description of Survey

The survey questions were firstly structured according to the main components of the generic activity model of statistical organizations (GAMSO), namely

- strategic vision,

- legislation,

- institutional arrangement and partnerships,

- data sources,

- methodology and quality assurance,

- communication and stakeholders consultations,

- human resources, and

- IT management.

For those areas, a total of 47 questions were posed related to big data, data science and modernization in general. Another 14 questions were added specifically on the functioning of the UNCEBD with questions related to the UNCEBD conferences, task teams, the regional hubs and the UN Global Platform. The full set of questions is shown in Annex 1.

Conducting the Survey

The survey was sent to 218 NSOs and 67 IOs. In total, 87 NSOs completed the survey, as well as 15 IOs. The breakdown of participating NSOs by region was as follows:

Africa	14
Asia	21
Europe	30
Latin America and the Caribbean	9
Middle East	7
North America	2
Oceania	4

From the 87 NSOs, 57 were from non-OECD countries and 30 from OECD countries. In the results shown in this report we did not go into any country breakdowns, but it is the intention to do further analysis during 2024.

Description of Interviews

The interview questions covered 7 categories, namely:

- UNCEBD mandate and value proposition

- Terms of References of the task teams and the regional hubs

- UN Global Platform

- Communication

- Strategic Framework

- Organizational adaptability

- Use of new data sources

The persons, who were interviewed, were all stakeholders of the community of UNCEBD. This included persons, who were members of the Advisory Board of UNCEBD, members of various task teams or members of the Regional Hub, and some persons, who were service providers in the activities of the UNCEBD.

Conducting the Interviews

In total, 41 interviews were held, mostly with one person at a time and in a few cases with several persons at the same time. The interviews were held mostly via video conferencing. A few interviews were conducted in person.

The interviewers were Eric Deeben, who was hired as a consultant of UNSD, and Alexander Loschky, who is a staff member of UNSD.

Of the persons, who were interviewed, 19 came from NSOs, 18 from IOs and 4 from private sector and research institutes. Out of the 41 interviewed, 16 were involved closely in the work of the task teams. Four of the five hubs were represented in the interviews.

Each interview was recorded and lasted for about 45 minutes to 1 hour. We used the help of generative AI to synthesize the information under the 7 categories described above.

Results of the Survey

Strategic vision

National Statistical Offices (NSO) worldwide are prioritizing modernization and innovation in their vision and mission statements. Approximately 78% of NSOs have explicitly incorporated references to modernization, innovation, data science, and the use of alternative data sources, such as Big Data, into their strategic agendas.

Many NSOs have recognized the value of integrating alternative data sources, notably big data, to provide more comprehensive statistical outcomes. This is further bolstered by a growing emphasis on using administrative data from public institutions to produce official statistics. Technological innovation is at the forefront of this transformation, with many organizations harnessing virtual machines, artificial intelligence, mobile phones, and web scraping to streamline data collection and processing.

The focus isn't just on data gathering, but also on ensuring its quality, timeliness, and relevance. NSOs are emphasizing their commitment to both national and international standards to provide valuable insights to stakeholders at all levels. Some NSOs have detailed strategic plans guiding their modernization efforts, highlighting architecture-driven progress, a strong inclination towards innovation, and an embrace of data science.

Human resource development is another key facet, with offices emphasizing the necessity for a skilled workforce adept in modern statistical techniques.

Collaboration is a recurrent theme, with many NSOs engaging in joint projects with other statistical offices or institutions. This collective approach facilitates shared learning and capitalizes on combined expertise. Reflecting their ambitions, several NSOs envision becoming globally acknowledged leaders in statistical analytics. They are aiming to establish resilient data ecosystems that are both innovative and adaptive to evolving demands.

Moreover, there's an observable shift towards making statistical data open and accessible, aligning with the global push to democratize data access. Efficiency, bolstered by modernization and automation, is another highlighted priority. Lastly, several NSOs underscore the importance of maintaining global standards, ensuring that their data is internationally comparable.

In summary, the global narrative among NSOs is clear: there's a concerted move towards modernization, innovation, and the integration of diverse data sources to deliver timely, pertinent, and superior quality statistics. This paradigm shift is aimed at better catering to the multifaceted needs of policymakers, researchers, and other stakeholders in an increasingly data-centric era.

High-level goals of multi-year plan - Does your organization have a strategy for innovation and modernization?

National Statistical Offices   International Organizations

- Yes
- No, but in planning stages
- No

Topics **part of the organization's innovation strategy**

National Statistical Offices   International Organizations

- Access to data from private sector
- Modernization of statistical legislation
- Use of Satellite data
- IT Cloud computing and services
- Data privacy protection
- Capacity development in data science or data engineering
- Collaboration with universities or private partnerships
- Other

Legislation

Various countries around the globe are recognizing the critical role of accessing private data for statistical purposes. As such, a multitude of nations have implemented or are working on refining laws and legislation that would empower their national statistical offices (NSOs) to access data from the private sector.

For instance, Thailand's National Statistical Office operates under the Statistics Act of 2007, ensuring methods for censuses are governed and false data provision is penalized. Similarly, Poland employs the Act of 29 June 1995 on Official Statistics, which covers multiple sectors, and Ukraine's law on official statistics provides access to administrative data. Notably, numerous other countries, such as Saudi Arabia, Palestine, Lithuania, and more, have specific legislation that facilitates the collection of private data for official statistics.

Furthermore, several countries have future plans to either implement or refine their legislation. Trinidad and Tobago, for example, has legislation under cabinet review, while Indonesia is revising its Law No. 16 of 1997 on Statistics, currently under parliamentary review. Some respondents anticipate legislative updates around 2024, while others foresee changes in 2025. A notable point is the Generic Law on Official Statistics, which some countries plan to adopt within the next two years.

However, there exists a level of ambiguity and uncertainty among some countries. A number of respondents expressed it is unclear when legislative updates will occur or even if they are planned. Several are still contemplating the adoption of Regulation (EC) No 223/2009 on European statistics, while others expressed a complete lack of knowledge about any upcoming legislative changes.

In summary, there is a global trend towards formulating and refining laws that would allow NSOs to access private data. While many nations are proactively setting timelines and updating their legislation, a portion remains uncertain or unaware of their future directions in this area.

Legislation for private data - Is there specific Statistics legislation (Act or Law) in your country that supports your institute in facilitating access to privately held data, including data from the private sector?

NSO

●	Yes	41
●	Yes, and update planned	14
●	Tried and failed	3
●	No, but update planned	19
●	No, and no update planned	14

Institutional arrangements

National Statistical Offices (NSOs) and International Organisations (IOs) are pivotal players in data and statistics, guiding decision-making at multiple levels. The exploration into their strategic affiliations demonstrates a vast network of relationships: 94 with government agencies, 83 with academic institutes, 66 with the private sector, 52 with civil society, 84 with regional or international agencies, and 74 encompassing cross-border partnerships. Their initiatives in modernization reveal varied levels of engagement. For instance, 9 organizations tap into data from the private sector, 6 undertake the modernization of statistical legislation, 8 employ satellite data, 6 rely on cloud and IT services, 10 prioritize data privacy protection, 13 focus on capacity development in data sharing, and 11 collaborate with universities.

Further, the commitment to innovation within the national statistical system is evidenced by 49 organizations developing data science capabilities, 76 accessing data, 80 ensuring data quality, 52 upgrading IT infrastructure, 56 asserting the legal right to data use, 58 aligning privacy protection with government directives, and 28 facing challenges with documentation.

Feedback from NSOs provides insights into their roles and challenges. Some indicate that questions related to leading modernization aren't relevant to their functions. Others pinpoint focus areas such as statistical literacy, training, and various facets of data collection and dissemination. A challenge resonating among a few is communication difficulties arising from the lack of standardized language protocols. Estonia's unique stance is the absence of ONAs in their framework. Statistics Sweden's pioneering initiative stands out, aiming to elevate data science capabilities which could be influential for peers in the future. In essence, while a significant chunk of NSOs and IOs is fervently embracing modernization and innovation, a subset feels the questions don't resonate with their operations. The landscape, diverse in its initiatives and challenges, underscores the ever-evolving nature of data-centric organizations in a rapidly changing global environment.

Strategic relations - Does your organization maintain strategic relations with institutes from the following stakeholder communities? Please check all that apply.

NSO

🔵 Government agencies	94
🟠 Academic or research institutes	83
🟢 Private sector companies	66
🔴 Civil society organizations	52
🟣 Regional or international agencies	84
🟤 Cross-border partnerships with ...	74
🟣 Other	3
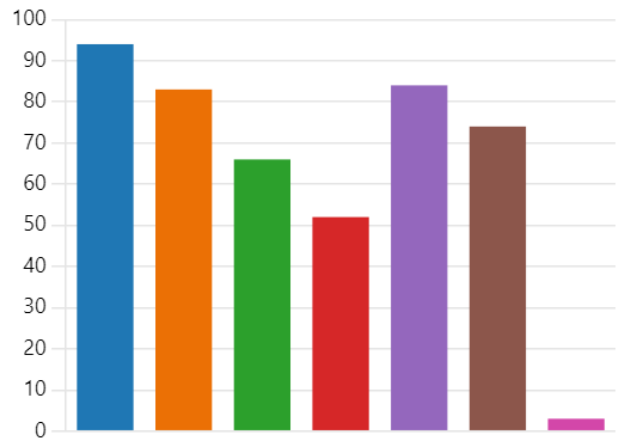
IO

🔵 Access to data from private sector	9
🟠 Modernization of statistical legis...	6
🟢 Use of Satellite data	8
🔴 IT Cloud computing and services	6
🟣 Data privacy protection	10
🟤 Capacity development in data s...	13
🟣 Collaboration with universities o...	11
⚫ Other	2
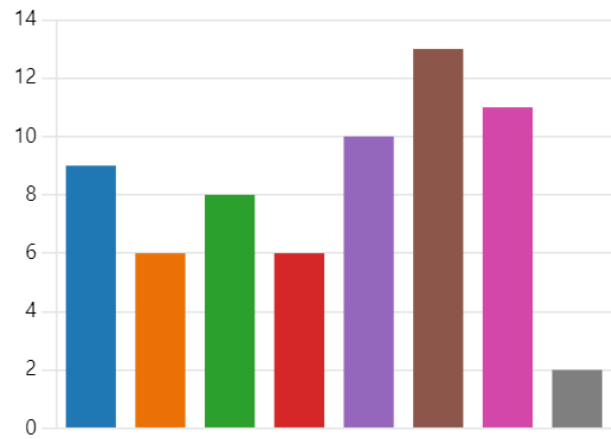
Methodology and Quality

Methodology and Quality in implementing Big Data and Data Science

The global landscape of statistical production is undergoing significant transformations. A majority of NSOs are embracing the potentials of Big Data and data science. Specifically, 77 NSOs have affirmed this transition, while only 18 refuted.

NSOs develop methodological innovations to incorporate a multitude of data sources and apply new tools. There is a notable inclination towards satellite, GIS, and mobile positioning data, particularly for applications to estimate agriculture or tourism statistics. Web scraping has found its utility in consumer price statistics, real estate data, and many more. Moreover, e-commerce data, mobile data, and scanner data are being integrated for various statistics. A standout is the application of AI techniques for handwriting recognition, text classification, and automated encoding.

Human resource development has become imperative. NSOs are focusing on recruiting statisticians with data science skills or retrain existing personnel in data science. Many began pilot projects as early as 2017 to integrate big data. These projects involve testing of new methodologies and machine learning algorithms, while aiming for full-scale implementation soon. Strategically, significant changes are anticipated in the next 3-5 years, with some already formulating roadmaps and strategic plans for this shift.

The technological infrastructure supporting these changes is also evolving. Centralizing data, investing in cloud technologies, and updating the ICT infrastructure are high on the priority list. Ethical considerations, data access and quality assurance remain challenges. Collaborations with universities, private entities, and international organizations are facilitating this transition.

Diversification and Granular Analysis. A recurring theme is the diversification of data sources. NSOs are moving from solely depending on survey data to exploring alternative sources like geospatial data, mobile data, web scraping, and more. This diversity promises timely, granular analysis making statistics more actionable. Tools from data science, such as Machine Learning (ML) and Artificial Intelligence (AI), are optimizing the statistical production process, providing insights into broader societal trends.

International Organizations are also modernizing. Upgrading of skills, geospatial data applications, collaborations, and machine learning are their focus areas. Tools like GitHub repositories, data science tools for quality checks, and modern data catalogs are being employed. UNCTAD, for instance, uses machine learning for trade matrices and crisis indexes. A spotlight is on new data sources like mobile data, satellite data, and data from platforms like Facebook. While harnessing commercial and administrative data, ensuring compliance with international methodologies remains a concern.

In essence, there's a clear global shift towards harnessing Big Data and data science in transforming statistical production processes. The journey, although diverse across entities, underscores collaboration, innovation, and shared learning.

Emerging issues and user needs - Is your organization transforming (or planning to transform) your statistical production process using Big Data and/or data science?

National Statistical Offices   International Organizations   ● Yes ● No

Emerging issues and user needs

In addressing emerging issues such as COVID-19, high inflation, and natural disasters, various institutes, including both NSOs and IOs, have implemented a multi-pronged communication strategy.

NSOs predominantly harness digital and telecommunication platforms, embracing methods such as emails, Zoom, telephonic conversations, and dedicated websites. The prominence of social media cannot be understated, with platforms like Facebook, LinkedIn, Instagram, WhatsApp, and Twitter acting as crucial communication conduits. Traditional methods, such as press releases, informative notes, and statistical reviews, are issued routinely. Collaboration with government entities and associated bodies is standard, with data sharing and joint coordination through national committees. Engagement events, including press conferences, parliamentary hearings, and public consultations, further solidify the direct connection with stakeholders. Unique approaches have also emerged, such as the establishment of dedicated teams, emergency response groups, and specialized online areas. However, some offices noted challenges in maintaining consistent and effective communication.

The second part of NSOs' response reveals a more detailed approach, emphasizing digital communication methods, such as dedicated web sections, social media infographics, and online training courses. With the easing of COVID-19 restrictions, physical interactions, including face-to-face meetings and inter-agency gatherings, resumed. Feedback mechanisms, collaborative strategies, and specialized initiatives play a pivotal role in refining the quality of communication, meeting user needs and adapting to challenges, such as the high demand for standardized data.

For international organizations, digital correspondence, particularly through platforms like Zoom and Google Meet, dominates the communication strategy. Official publications and announcements form a major part of their outreach. Websites, blogs, and data visualization tools are leveraged for effective dissemination of information. Social media continues to be a preferred channel for institutions like the World Bank and Eurostat. Coordination and collaboration with other entities ensure a comprehensive approach to understanding and addressing emerging challenges. Media engagement, dedicated platforms, and flagship publications further enhance the quality and reach of

their communication.

In sum, the methodology employed by these institutions is a blend of digital advancements and traditional approaches. The emphasis is on ensuring quality, consistency, and comprehensiveness in communication, ensuring stakeholders are well-informed and engaged amidst evolving global challenges.

Communication strategy

Summary: Communication Strategy for NSO & IO on Emerging Issues and User Needs

NSOs and IOs have recognized the profound importance of effective communication, especially when conveying results emanating from new technologies or alternative data sources.

For NSOs, digital platforms like websites and social media channels have emerged as pivotal. They're actively leveraging these platforms by publishing short video clips to foster data literacy, crafting data visualizations, and establishing dedicated sections for 'experimental statistics'. To complement these efforts, traditional methods like printed media, press releases, and stakeholder meetings, such as those for the Population and Housing Census of 2024, remain prevalent. Engaging stakeholders early—during initial planning and pilot testing phases—is seen as a best practice. Furthermore, many NSOs have instilled feedback mechanisms, ensuring a direct line of communication with the public. This involves addressing user queries promptly and even conducting annual Data Needs Surveys to gather feedback. A notable development is that several NSOs have formalized communication strategies that resonate with core principles like technical independence, statistical confidentiality, and quality. Language diversity in communication, emphasizing non-English languages, underscores the global nature of these communications. Meanwhile, some NSOs are still in the embryonic stages of developing or fully implementing their communication strategies, suggesting a dynamic and evolving landscape.

IOs, on the other hand, lean heavily on public presentations, workshops, and meetings to relay their findings. Many have also instituted dedicated communication teams or abide by specific standards to streamline and enhance the communication process. Digital means, notably websites, blogs, and dedicated sections, are pivotal. The World Bank, for instance, disseminates data insights via their blog. In tandem, publications like country reports, working papers, and methodological notes serve as another principal channel. Methodological transparency is paramount, as evident from the comprehensive methodological notes provided by entities like UNCTAD. The European Central Bank (ECB) stands out with its meticulous approach, emphasizing data's fitness for purpose, comparability, and availability, while also providing robust conceptual support.

In summation, both NSOs and IOs display a conscious move towards a balanced blend of modern digital platforms and traditional communication means. The overarching aim is clear: to effectively communicate results, particularly those derived from new technologies and data sources, while ensuring transparency, outreach, and quality.

Emerging issues and user needs - Do you have a communication strategy?

National Statistical Offices

International Organizations

- Yes
- No
- No, but planned

Human resources

Summary Capacity development and Recruitment

The evolving dynamics of the data-driven era have prompted both NSOs and IOs to address the growing needs in areas of data science, data engineering, and other related disciplines. This urgency is reflected in their respective roadmaps and capacity development strategies. For NSOs, the significance of capacity development in data science and data engineering is evident. Many NSOs utilize various mechanisms such as training programs, collaborations, and strategic planning to build this capacity. However, there exists variability in the integration and adoption of these roles, largely influenced by factors like governmental policies, financial situations, and even specific definitions or roles in the organization. Despite the enthusiasm, financial constraints remain a hurdle for some. On the other hand, IOs are not far behind in understanding the gravity of the situation. Emphasizing data-driven decision-making, IOs are continuously exploring and implementing methodologies to ensure their personnel, as well as their associated member nations, are well-versed with the required skill sets.

When diving into the recruitment dynamics, it becomes apparent that the range is broad. For NSOs, the figures for data science professionals span from 0 to 500. A prominent chunk falls between the 0 to 30 range. A noteworthy insight is that not all offices have roles specifically titled as "data scientists" or "data engineers". Such responsibilities often fall under different designations such as statisticians or IT specialists. The diversification in roles and the variance in numbers are also mirrored in IOs, with the highest reported employment figure lying between 40 and 50 and the lowest being 0. Regarding new hires over the last year, NSOs exhibit a varied spectrum: from offices that have not added any new roles to those who have hired as many as 50 new data professionals. Similarly, the hiring trends for IOs range widely, with a total reported hire of 17 data professionals, excluding ambiguous responses. In essence, while both NSOs and IOs display a strong commitment to enhancing their capacities in data-centric roles, the journey, methods, and outcomes differ significantly across the board. The overarching theme is clear: the significance of data science and engineering is undeniable, and these entities are maneuvering their strategies to align with the demands of this data-driven age.

Roadmap in capacity development - Does your office have a roadmap to develop capacity in new areas, such as data science, data engineering or similar?

National Statistical Offices   International Organizations

Yes
No
No, but planned

Project Roles

Summary: Big Data and Data Science in National and International Statistical Projects

Across the global landscape, NSOs and IOs are dynamically integrating big data and data science, innovating their methodologies and enhancing their statistical outcomes. The value of these tools is evident in their varied applications: from the Republic of Belarus using road traffic data to assess tourist flow and cash register information for understanding consumer prices, to broader studies by ESCAP on environmental and gender relationships in the Asia-Pacific. Furthermore, technology, such as satellite imagery, is playing a transformative role, as seen in the World Bank's crop estimation project.

With projects like the AnigeD Project in 2023, which partners with mobile network providers, and the Russian Federation's big data system, the boundaries of traditional data analysis are being expanded. These initiatives span a spectrum of roles, involving data scientists, IT professionals, statisticians, and field experts, pointing to a growing interdisciplinarity in the sector.

NSOs, in particular, are pushing the envelope. Several AI-driven projects are focusing on automated statistical classification. There's an evident surge in projects like BPS's Indonesian tourism analysis using mobile positioning data and those that leverage satellite imagery for agricultural statistics. Notably, web scraping, machine learning, and geospatial technology are trending methodologies, transforming sectors from banking to agriculture. This technological wave is exemplified by NSOs in Italy and Singapore, with innovative methods like scanner data for price indices and text mining for enterprise web functionality analysis.

However, amidst these advancements, there are challenges. Yet, even in the face of setbacks, entities remain committed, such as Statistics Sweden, which is exploring mobile phone data as alternative information sources.

Internationally, the World Health Data Hub, FAO Data Lab, and World Bank, among others, are setting benchmarks in data protection, engagement, and innovative application, especially during critical times like the COVID pandemic. Furthermore, collaborations like UNECE emphasize the growing importance of machine learning in official statistics.

In essence, the integration of big data and data science in national and international statistical domains is transformative. The blend of diverse roles, methodologies, and innovative projects reflects a promising, dynamic future for statistical analysis and interpretation in this digital age.

Summary of Big Data or Data Science Projects in National Statistical Offices

The National Statistical Offices (NSO) survey revealed a diverse range of Big Data project engagement among respondents. While 10 respondents indicated one active Big Data project, a similar number of respondents reported no active projects. Figures varied across the spectrum with some organizations having as many as 20 active projects. Responses also included vague estimates, with one detailing around 30 projects related to the NDB. Specific initiatives mentioned involve web

scraping, mobile phone data utilization, and the European "Trusted Smart Statistics (TSS) – Web Intelligence Network (WIN)" project. Some respondents highlighted the initial or pilot phases of their Big Data endeavors, while others provided non-specific feedback.

Conversely, International Organizations (IO) showed varied Big Data project involvement. While one organization boasts of about 100 active projects, another highlighted none. Specific numbers ranged from 1 to 20 projects across different organizations. The International Monetary Fund (IMF) showcased its substantial engagement in Big Data, with a community of practice initiated in 2018 and around 50 research projects executed over five years. In essence, while some organizations are deeply embedded in Big Data projects, others are only scratching the surface or are yet to venture into this domain.

Cultural Change

Summary on the Challenge, Change, and Impact of Introducing Innovation in NSOs and IOs:

In National Statistical Offices (NSOs) and International Organizations (IOs), the introduction of innovation has been met with a myriad of challenges, instigated changes, and led to tangible impacts.

NSOs: The challenges were widespread. From a human resource perspective, there was a gap in capacity and skill set, especially in the adoption of tools like R and Python. Technologically, transitioning from traditional paper-based methods to digital posed barriers, as did integrating and processing vast data from varied sources. Culturally, resistance to change and skepticism towards new approaches were dominant. Operational issues, like ensuring consistency with historical records, were also present. Financial constraints, data accessibility, and legal regulations, especially in realms like data protection, added to the challenges.

However, the innovation brought about marked changes. Automation emerged as a game-changer, reducing data processing times significantly. Ground data collection saw a reduction, thanks to alternative big data sources. NSOs began witnessing a transformation in their organizational structures and the necessity to integrate modern data science tools.

The impacts were predominantly positive. Data quality and timeliness received a significant boost. Operational efficiency improved, with innovations setting new standards. During unprecedented times, such as the COVID-19 pandemic, some offices could continue data collection seamlessly. Furthermore, data insights broadened, covering new domains and offering granularity.

IOs: IOs faced similar challenges. A pronounced issue was the absence of Data Science experts and the infrastructure to support innovation. The compartmentalized nature of health data and the need for capacity-building were recurrent issues. Financial constraints, particularly when implementing new projects, were pressing. The existing infrastructure wasn't always conducive to innovation, often lacking roles crucial for new data-driven approaches.

Change was evident, with AI emerging as a prominent tool. Many shifted to platforms like R for automation and process efficiency. A trend toward standardization, automation, and data source interoperability emerged.

In terms of impact, the potential of big data was recognized and capitalized on. Organizations like the World Bank Group began using Big Data more for developmental purposes. Communication improved, the quality of data production enhanced, and collaborations expanded. The potential for process improvements and the introduction of new statistical products began gaining acknowledgment.

On Cultural Change (NSO Q38 & IO Q32): The question aimed to measure the cultural change impact of introducing innovation. While specific responses aren't provided here, gauging cultural change is pivotal. A scale of 1 to 5, with 1 indicating minimal impact and 5 indicating significant

cultural transformation, would be a standard metric. NSO's scored and average of 3:16 and SO an average of 3.53. It would shed light on how deep-rooted and impactful the cultural shifts were, giving a barometer of the internal acceptance and adaptation to innovative changes.

In conclusion, while challenges in integrating innovation are evident across NSOs and IOs, the changes and positive impacts underscore the importance of adapting and evolving in the current data-driven landscape.

Impact of cultural change - Rate the impact cultural change had on your organization
(1 being little to no culture change impact; 5 being a large culture change impact)

National Statistical Offices

3.16
Average Rating

International Organizations

3.53
Average Rating
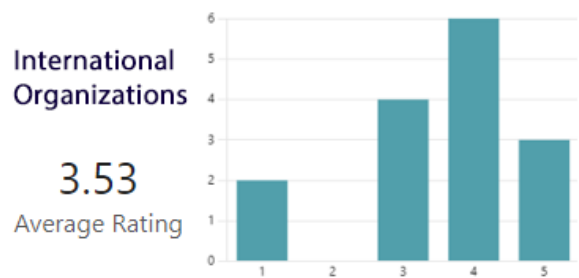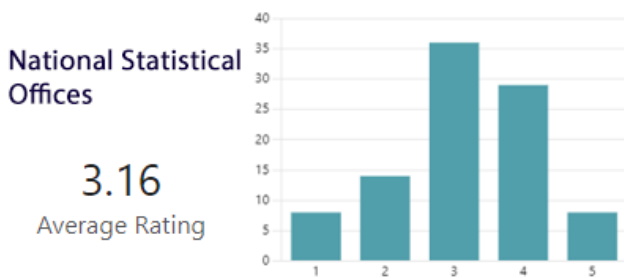
Infrastructure and IT roadmap

In response to inquiries about the evolution of technology infrastructure for modernization, international organizations have displayed a broad shift towards integrating modern technological solutions. A notable move towards IT Cloud Services is evident, suggesting a general trend towards cloud computing. Organizations also favor a gradual upgrade to their IT infrastructure, indicating a cautious approach to technology integration. Moreover, the establishment of Data Science Labs underpins the heightened importance of data-centric decisions. Additionally, these organizations are actively seeking collaborations with private tech companies and academic institutions, demonstrating a blend of internal advancements and external partnerships for technological advancement.

On the topic of IT strategy or roadmap, NSOs have shown varied but converging strategies. A significant emphasis is on digitalization and leveraging advanced technologies like AI and Machine Learning. The "Cloud-First" strategy, focused on introducing and enhancing cloud computing capabilities, seems prominent. Attention to secure data management and ensuring cybersecurity are among the top priorities. These offices also emphasize human capital development, especially in new-age digital technologies, showing a forward-looking perspective. Another recurring theme is the spirit of collaboration, both internally and with external partners, indicating a cohesive approach to data handling and statistical analysis. Lastly, making statistical data accessible to the public and keeping the end-user at the center of their strategies was a shared sentiment.

Furthermore, international organizations such as the World Bank Group and the IMF have outlined roadmaps emphasizing data's role in various aspects. These strategies span from strengthening country-specific data systems to using data-driven insights for internal decision-making processes. Organizations such as Eurostat have delineated their strategies around maintaining current business standards while also preparing for future statistical requirements. They underline harmonizing objectives among various internal teams and embracing agile responses to future challenges.

In conclusion, both national and international entities are placing strong emphasis on modernizing their technological infrastructure. Their strategies indicate a balance between adapting to new technological norms, ensuring data security, fostering collaborations, and keeping their primary stakeholders, the public, in focus.

Technological infrastructure - Which describes the best of the change in your institute for modernization?

IT roadmap - Does your office have an IT strategy?

National Statistical Offices   International Organizations

- Yes
- No
- No, but planned

Cybersecurity and privacy protection

In an age, where digital technology is becoming increasingly integrated into our daily operations, institutions globally are demonstrating heightened attention towards cybersecurity and data protection. The importance of these areas is underscored by several survey queries made to institutions regarding their adherence to national and international standards.

A pivotal question was on compliance with national government cybersecurity guidelines. It is an essential gauge of the alignment of institutions with their respective government mandates on digital security.

Shifting the focus to data protection, does your institute have data protection guidelines probed on the existence of their data protection guidelines. Data protection is not just about adhering to legal mandates; it is about ensuring stakeholders' trust, maintaining reputation, and preventing potential breaches that could result in substantial financial and reputation damage.

Feedback from NSOs provided valuable insights into the global posture on cybersecurity:

- While several nations have specialized agencies like GovTech and CERT for data security, the landscape of national regulations is diverse. There are countries with well-established frameworks and others still charting their course.

- International standards such as ISO 27001 find common ground among respondents.

- The emphasis on data privacy, exemplified by sharing documents solely within intranet environments, speaks volumes about the precautionary measures in place.

- Mention of entities like Nigeria's National Information Technology Development Agency signifies the gravity with which nations view cybersecurity compliance. Simultaneously, nations without specific guidelines reflect the early stages of some national cybersecurity frameworks.

- Collaboration emerges as a recurring theme, with a nod to international standards and a focus on data protection, transparency, and national security.

Diving deeper into data specifics, if the office's data protection guidelines are making specific provisions for the handling of large volumes of granular data (Big Data) raises a contemporary issue: handling large volumes of granular data, or 'Big Data'. While several National Statistical Offices (NSOs) confirmed the presence of data protection guidelines with a few even highlighting provisions for Big Data, a noticeable fraction admitted the absence of such guidelines. This disparity showcases the varying readiness levels of institutions to handle the deluge of data in today's digital age.

Lastly, the comments brought to light the variety of guidelines and policies international organizations have embraced. From the E-Government Authority (EGA) to the International Monetary Fund (IMF), there's a spectrum of approaches, all emphasizing the importance of data protection in line with their specific mandates and international standards.

To summarize, while there's a unanimous global push towards bolstering cybersecurity measures and fortifying data protection strategies, the journey is a mosaic of various stages, strategies, and standards, shaped by local imperatives and international collaborations.

Data Protection Guidelines

Guidelines - Does your institute have data protection guidelines?

National Statistical Offices   International Organizations

- Yes
- No

UN Big Data International Conferences

The UNCEBD organized an international conference on Big Data and data science for official statistics in 2014 (Beijing), 2015 (Abu Dhabi), 2016 (Dublin), 2017 (Bogota), 2019 (Kigali), 2020 (virtually with Statistics Korea) and 2022 (Yogyakarta).

In total, the UNCEBD held seven international conferences on Big Data and data science for official statistics in various global locations, including a virtual collaboration with Statistics Korea. Offices were queried about their participation in these events, which would provide an indication of their engagement level.

Have staff members of your office participated in these conferences?

National Statistical Offices   International Organizations

- In all 7 conferences
- More than once
- Only one time
- Never

UNCEBD Task Teams

The UNCEBD develops guidance through its nine task teams and organizes training activities for statistical development. Offices were asked about their active participation in these task teams and if they are inclined to join or continue their involvement in the future.

The Data Science Leaders Network, created under the UNCEBD in 2022, offers a platform for data-driven leaders to collaborate. Offices expressed their interest in joining this initiative. The UN Global Platform, launched in June 2020, is another pivotal entity providing opportunities for hands-on experimentation with Big Data and global expert collaboration. The survey assessed the offices' eagerness to embark on projects through this platform.
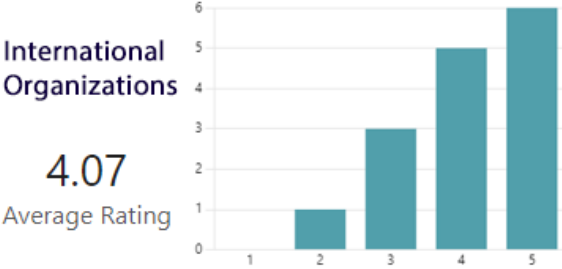
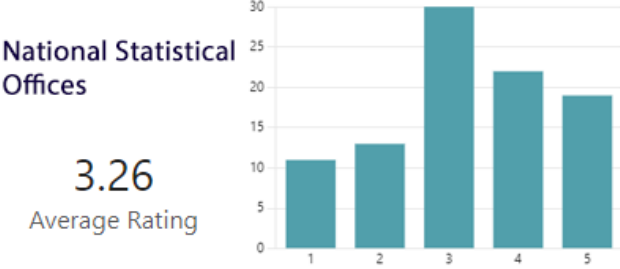**Task teams participation -** which task teams your office has been actively participating
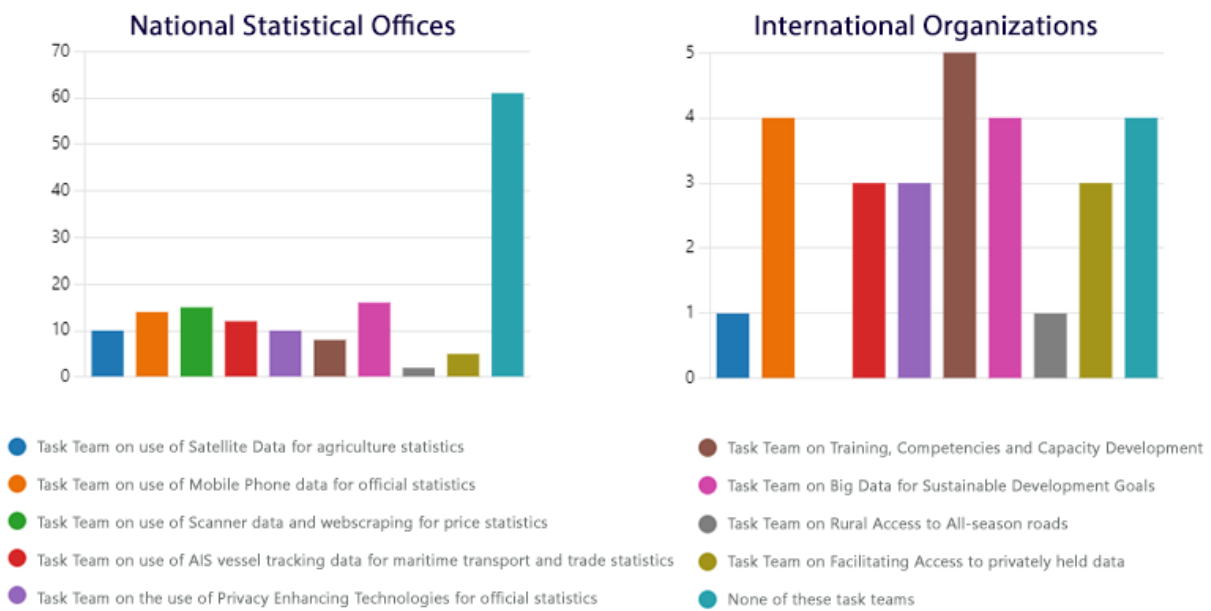
Task teams of interest - which task teams your office would be interested to participate in?
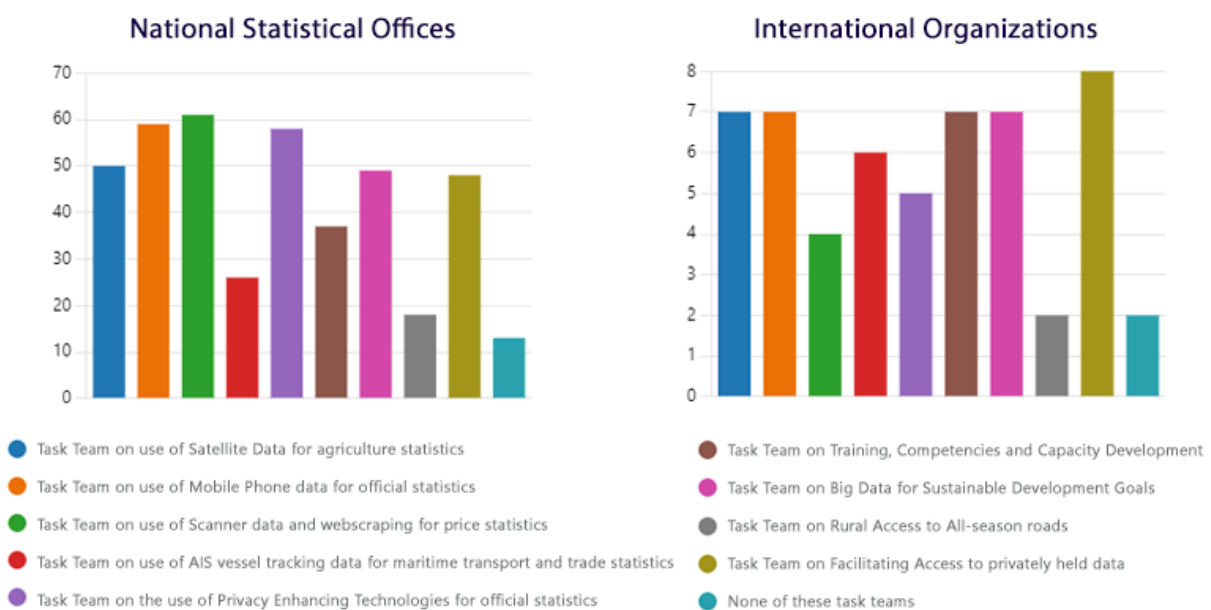
Value of the UNCEBD to your organization - Based on your experience would you rate the work of the UNCEBD to your organization?

National Statistical Offices

3.26
Average Rating

International Organizations

4.07
Average Rating

UN Global Platform

The UN Global Platform has recently solicited feedback from NSOs and IOs on potential enhancements and improvements. A dominant concern expressed by NSOs centers around the need for enhanced communication and increased visibility, underscoring a pressing demand for the platform to further its outreach efforts. A focus on inclusive participation is also evident, with emphasis on prioritizing developing countries, small islands, and marginalized regions. Alongside, there is a substantial call for involving a broader array of stakeholders ranging from civil society to academia and private sectors.

Training and capacity-building emerge as pivotal, with suggestions ranging from individualized training modules tailored to specific office needs to the provision of short online learning sessions more frequently. The platform's user experience and available resources have come under scrutiny as well, with stakeholders expressing a desire for improved accessibility, the availability of high-performance computing infrastructure, and connections with other data platforms to avoid redundancies and enhance data source diversity.

Collaboration stands out as a key theme, with respondents voicing the necessity for enhanced collaborative tools, seamless data sharing, and increased coordination with UNECE and Eurostat to prevent overlaps. Moreover, there are repeated calls for bolstered multilingual support and revisions in the tools employed for communication.

IO feedback also echoes some of these concerns. Improved communication and heightened awareness about the platform are essential. Some organizations signaled usability issues, suggesting a revamp in the account set-up processes. There's a palpable demand for the platform to host more datasets, especially of global relevance, and to facilitate collaborations among organizations working on data science projects. Additionally, IOs have indicated that the platform could benefit from showcasing the tangible impacts of its data science work on policy and programming through events or webinars. Furthermore, to assist users, additional tools and more immediate support mechanisms, like chat or WhatsApp, are seen as beneficial.

In summary, while the UN Global Platform is seen as a valuable tool, there are areas where stakeholders believe it can further evolve and expand its offerings. Communication, collaboration, training, and enhanced user experience stand out as primary focal points for future development.

Regional and Global Hubs

Feedback from NSOs and IOs emphasizes the importance of strengthening the regional and global hubs to optimize their contribution to the global data and statistical community.

A recurring theme across NSOs is the call for enhanced engagement, clearer communication, and involvement of member country NSOs in hub activities. NSOs often find themselves on the periphery of these hubs, signifying a clear communication gap. Addressing this would require a holistic review of meeting frequencies, clarity on the roles of hubs, and tailored communication strategies.

Additionally, there's a growing need for more interactive participation at regional level, in particular in the regions with small islands. A sizable portion of NSOs highlighted the requirement for better funding and aligning hub activities more closely with their business models. Further, the importance of coordination was mentioned, not just with the hubs but also with external entities.

The responses emphasize the need for tailored approaches. Regional and global hubs should prioritize localized solutions that take into consideration the unique technological and functional needs of each NSO. Capacity building remains a pivotal requirement, with suggestions leaning towards continuous engagement models like post-training mentoring. Furthermore, the importance of resource strategies, inclusive of partnerships and grant mobilization, is evident.

From an IO perspective, the emphasis pivots slightly towards enhanced collaboration with entities like the Global Data Institute and a more hands-on approach from UNSD in overseeing hub activities. The protection of data, especially regarding privacy, emerges as a concern that needs addressing. As with NSOs, communication and awareness are paramount. IOs suggest the production of frequent communication materials, augmented interaction with NSOs, and increased awareness regarding platforms at their disposal.

In conclusion, while regional and global hubs serve as vital nodes in the global data and statistical network, their effectiveness can be exponentially enhanced through more inclusive participation, tailored approaches, capacity building, and stronger inter-institutional collaborations.

Results of the Interviews

UNCEBD mandate and value proposition

The mandate in question is largely perceived as valid but dated, although there are some contentions and suggestions for refinements updating, such as evolving the term "big data " to reflect its normalized status as just another data source in today's context. Therefore, to align with contemporary data realities, there is a pressing need for the UNCEBD to modernize its mandate beyond just 'big data', encompassing 'modern methods' and 'statistical algorithms', and involving the private sector actively.

Additionally, there is a noticeable shift in focus of the mandate in prioritizing partnerships with technology companies, presumably to leverage their capabilities and insights to enhance the mandate's effectiveness and relevance in the evolving landscape.

In terms of value proposition, being part of a global community is seen as beneficial by most respondents. The opportunities for networking, gaining insights into global practices, and contributing to broader discussions are highly valued. UNCEBD's engagement in proliferating perspectives on open data, and its initiatives like mentor-mentee programs and data challenges have received positive feedback. However, the abundance of information poses a challenge, as sifting through the data sources to identify valuable content can be overwhelming and time-consuming.

There seems to be a prevalent perception of an overemphasis of the benefits of big data, which some feel is overshadowing important methodological and statistical concerns. The discussions on the use of big data are found lacking in terms of yielding practical outcomes, leading to a perceived disconnect between the envisioned goals and the real-world challenges faced by the entities. A more balanced approach is needed addressing both the potentials and the methodological concerns of big data as well as a framework to translate discussions into actionable outcomes making the mandate more effective and purposeful.

Terms of Reference of task teams and hubs

The Terms of Reference for task teams and regional and global hubs have been instrumental in fostering development and coordination within the framework of the UNCEBD. Task teams, by producing handbooks and resources, have acted as support structures for national statistical offices, serving varied focuses, some addressing broader objectives and others zeroing in on specific types of data. They play a crucial role in translating broader mandates, such as those involving SDGs, into actionable insights by utilizing big data, but there is a visible need for improved communication between task teams and their audiences to optimize outcomes.

Regional and global hubs are visualized as pivotal points for training and coordination of regional activities, bridging the gap between UNCEBD's initiatives and national entities. They are designed to disseminate training across countries, optimizing resource utilization, but there is a discernible

lack of clarity regarding their direct impact and specific roles, necessitating enhanced clarity and autonomy to function as envisioned.

However, there are challenges. For example, the hubs need to communicate better about their activities and promote participation by countries in the region. At the same time, the hubs need to coordinate their work the UN Regional Commission, so that the capacity development activities of the hub feed into the Regional statistical programmes. Given the innovative nature of the training and project activities involving the use of data science and big data, the hubs need to collaborate with other NSO, the international organizations, academia, and the private sector. Strengthening the bonds of collaboration and harmonizing strategies among task teams, regional and global hubs, and UN entities is indispensable for optimizing resource allocation.

It is recommended that a shift be made from abstract, high-level discussions to more actionable, tangible outcomes that can be directly applied by NSOs, ensuring valuable, applicable information is disseminated effectively. Clearer, more definitive guidelines and increased autonomy for regional hubs are paramount, emphasizing their role as centers for training and resource dissemination, tailored to the specific needs and contexts of their regions.

In conclusion, the evolution of the mandate of UNCEBD, enhanced coordination, a focus on practical outcomes, clarified roles, and increased activity of regional and global hubs, and a holistic approach to collaboration are imperative for the continuing impact and relevance of UNCEBD's initiatives. It is essential that these elements are integrated cohesively to navigate the evolving landscape of data and statistics, balancing tradition and innovation, and fostering synergy among diverse entities in the ecosystem.

UN Global Platform

The UN Global Platform, a pivotal innovation developed collaboratively by ONS and the UN, stands out as a groundbreaking cloud-based infrastructure, extending to resources, data, methods, and tools, primarily aiming to support developing countries. It aspires to be a focal point for collaboration among statistical organizations. The platform is notably beneficial for providing comprehensive access to various data sources and is seen as an invaluable resource, especially for National Statistics offices. It meets training needs through effective e-learning systems, fosters collaboration, and allows diverse entities to store, learn, share, and collaborate on data.

However, reflections on its first few years of operation have identified critical areas of improvement and potential enhancements. Numerous stakeholders have encountered complexities in accessing the platform and have expressed a need for a more user-friendly interface. There's a prevailing ambiguity and a notable lack of clear communication surrounding the platform's principal function, be it as a provider of data, a space for data analysis, or for sharing. Moreover, concerns have been articulated about the presence of parallel platforms developed by various global entities, including the UN, the US, and the World Bank, underscoring the importance of consolidated collaboration. Additionally, the quality and volume of data available need

refinement, and concerns persist regarding the platform's longevity and stability, necessitating assurances beyond the existing one-year guarantee.

To elevate the platform's functionality and user experience, and to harness its full potential, enhanced communication strategies like regular briefings and newsletters, detailing the platform's offerings and purposes, are indispensable. Increased visibility, perhaps through regional promotions and detailed documentation of its features, is also crucial. Improved integration, more API integrations, and the introduction of advanced services can contribute to a seamless user experience and active computation and storage. A more inclusive and diverse approach would empower the platform to tackle global challenges more effectively, and long-term assurances are desired to guarantee continuity and stability of the platform.

In conclusion, the UN Global Platform, with its extensive data access and collaborative benefits, holds immense potential. Addressing the current challenges and implementing suggested enhancements will not only refine user experience but also ensure that it continues to fulfill the diverse requirements of stakeholders globally, thus cementing its role as a linchpin in the global statistical community.

Communication

The UNCEBD website is a crucial communication portal. The feedback on UNCEBD's communication reveals a consensus that while current efforts have been pivotal, there's a clear necessity for enhancement and refinement. The website is valued but criticized for outdated information and navigational difficulties, necessitating the implementation of user experience tools and regular content updates to boost functionality and user satisfaction. Suggestions for improved clarity, reduced overlap with other UN agencies, and simplification of naming conventions are prominent.

International conferences, recognized as vital for global collaboration and knowledge exchange, suffer from redundant overlaps and environmental concerns due to travel. Hence, it is recommended to host more theme-specific conferences with possible hybrid formats and expanding outreach.

Current communication tools and strategies, incorporating platforms like Yammer, Slack, and direct workshops, are appreciated, but there's a prominent desire for more accessible and persistent channels of collaboration, such as newsletters and webinars. The scheduling of meetings presents concerns for stakeholders in specific regions, requiring attention to inclusive scheduling and improved communication about regular meetings to ensure global participation. Overlaps and consolidations in different efforts and conferences lead to redundancy; hence a unified approach prioritizing flagship events and clearer team communication is advisable.

Engagement strategies need diversification, suggesting broadcasting main events online and promoting success stories and case studies for better reach and impact. Implementing regional hubs and creating handbooks are also recommended to improve accessibility and collaboration. Active inter-organizational communication is emphasized, and suggestions include multilingual

content and improved communication about available resources. By addressing these areas, UNCEBD can significantly enhance its communication efficacy, resulting in a more informed and collaborative global community in the forthcoming decade.

Strategic framework

In addressing the complex nexus of strategies being employed by various organizations and national statistical institutions, it is crucial to elaborate on the coherence and diversity within their strategic frameworks. Organizations like Statistics Denmark and FAO have developed explicit strategic frameworks that emphasize data-centric approaches, focusing on statistical advancements, microdata access, and data science. The FAO, for instance, has designed a three-pillar strategy that accentuates official statistics, data interoperability, and data science, symbolizing the holistic approach to data-centric organizational strategies that are commonplace among similar entities.

In a similar fashion, various organizations such as STATCAN and the NSI of Uruguay have adopted innovative strategies focusing on the inclusion of diverse data sources, efficiency, and infrastructural development, with a particular inclination toward leveraging mobile data for activities related to the pandemic. The utilization of big data for official statistics is a recurring theme, exemplified by Mongolia's strategic plans, and underscores the growing reliance on sophisticated data paradigms.

The role of international conferences in shaping strategic discussions around these topics is undeniable. In 2024 Bilbao will host the 8th Big Data conference that can lead to impactful changes in the future, especially around themes like climate change, encouraging the amalgamation of insights on big data and data science for official statistics.

The emphasis on a data-centric vision is evident, with numerous entities striving to augment their capacities in data access, processing, and sharing. The integration of advanced data sources, big data, and data science techniques is seen as integral to the realization of these strategic goals, fostering community development through a "smart data strategy" that underscores granularity and timeliness.

Frameworks across organizations echo themes of innovation, modernization, and proactiveness, with a significant emphasis placed on integrated data ecosystems that amalgamate statistical, spatial, and unstructured data. These frameworks are crucial in monitoring resources, especially in sectors like agriculture and the environment, reinforcing the drive toward creating adaptive, collaborative, and data-centric strategic frameworks.

Nevertheless, challenges in technological acquisition and skill forecasting remain substantial. The perceived dichotomy between the self-perception of official statisticians and government perceptions of their roles underscores a critical area for alignment and recalibration. Gathering diverse feedback, addressing the evolving nature of data science, and automation are crucial steps to ensure the adaptability and relevance of strategic frameworks. Continual reassessment, innovation, and adaptability are the bedrocks upon which the future of these strategic frameworks

rests, emphasizing a collaborative, modernized approach and leveraging multifaceted data for the collective societal good.

Organizational adaptability

Organizational adaptability has become paramount in the wake of unforeseen global events, such as the COVID-19 pandemic, underscoring the urgent need for agility and responsiveness within organizations, especially those operating under the UNCEBD mandates. Smaller agencies, already grappling with resource challenges and budget constraints, find it particularly strenuous to align with mandates and implement comprehensive data strategies. Despite such limitations, the imperative to be agile has led to a rapid modification in data collection and governance strategies across various organizations, ensuring continued adherence to project timelines, typically set to six months.

Within the realm of methodology and transparency, organizations are recognizing the importance of maintaining rigorous and transparent methodologies during time-sensitive projects. The integration of traditional and newer data sources presents methodological challenges, but consistency and cross-validation of narratives from multiple data sources have become pivotal. The innovation landscape is somewhat hampered by the traditionally rigid structures of organizations like the UN, with legal constraints and internal structures at times inhibiting the push towards modern technologies and innovative practices. However, some, including the OECD and ONS, have managed shifts towards data harmonization and have pioneered in the implementation of big data solutions.

Collaboration and harmonization across various sectors and organizations have surfaced as crucial elements, shaping policies and resulting in cohesive integration of efforts from organizations operating independently of UNCEBD, such as IMF, ADB, and UN Woman. Successful partnerships, evidenced by initiatives between ONS and its partners, underscore the potential benefits of harmonization through the establishment of data science campuses and the initiation of collaborative projects.

Training and onboarding new technologies remain areas needing enhancement, with official statisticians often requiring additional effort and support. Even though training workshops are being conducted, the post-training uptake in some organizations is found to be lacking, indicating a need for more effective training methodologies.

Feedback and enhanced presence are sought by stakeholders who often express feelings of isolation, hinting at a potential area of improvement for UNCEBD in its regional hub advocacy efforts. Continuous engagement and interaction are deemed essential, especially in a post-COVID environment, with organizations valuing feedback as a crucial component for implementing improvements.

Visioning the future, several organizations are annually conceptualizing strategies and developing roadmaps to encourage innovation and exploration of new data sources. These strategies and roadmaps are especially crucial in transitioning from traditional methods and adapting to

challenges posed by emergencies like the COVID-19 pandemic.

In conclusion, there's a universal acknowledgment of the importance of agility, collaboration, and innovation within the broader statistical community. UNCEBD, perceived as more adaptable and explorative, needs to align its structures and methodologies to foster an environment conducive to learning and adapting, ensuring the uninterrupted flow of services and functions in changing global landscapes. It's imperative to fortify organizational adaptability, enhance collaboration, and foster innovation to navigate the evolving landscapes of data science and to respond efficiently to unforeseen challenges.

Use of new data sources

The recent decade has marked a significant transition among UNCEBD stakeholders in embracing and integrating new and varied data sources, revealing a spectrum of experiences, potentials, and concerns. The collaboration with big tech and telecom companies, such as Google, is crucial given their expansive data reach, allowing mutual benefits to flourish, as witnessed in instances like Nigeria's SIM card registration initiative. Nonetheless, a discernable hesitancy lingers among some statistical offices, highlighting a pressing need to alleviate partnership barriers.

Emerging data sources, like mobile phone and spatial data, have been recognized as invaluable, assisting in events like census enumeration and pandemics, and gaining momentum in integration with more traditional forms, like surveys, for enhanced reliability and validation. A shift from solely relying on survey-based to registering diverse statistics is noticeable, emphasizing the utilization of data from administrative registers, geospatial infrastructures, and significant tech entities. However, enduring concerns about data privacy and the credibility of non-traditional data sources need addressing, alongside prevalent challenges related to accessing private sector data due to existing legislative constraints.

The focus on integrating various data sources has been consistent, underscored by voices like ESCAP, calling for resilient data governance systems and underscoring the significance of amalgamated datasets. Innovation and adept training in leveraging these new data sources are imperative, and many entities are progressively exploring and experimenting with revolutionary methods and unconventional data sources.

Despite the interest in new data sources, some entities have not adopted them swiftly. Rising costs of commercial data and the emergence of specialized players are concerns. The vision for many is a synergy between various data sources and statistics, with a focus on areas like sustainability. Suggestions include establishing an open data set repository on the UN global platform and continuously engaging in discussions to learn from peers.

The last decade has seen a shift in data collection methodologies and data sources among UNCEBD stakeholders. While the integration of new data sources offers potential, challenges related to privacy, access, and integration persist. Collaborative efforts, both within the public and

private sectors, will be pivotal in harnessing the full potential of these emerging data sources.

🔵 Satellite data		67
🟠 Mobile phone data		62
🟢 Retail store scanner data		56
🔴 Webscraping data		69
🟣 Credit card / Payment card data		47
🟤 Citizen generated data / Citizen ...		41
🟣 Additional administrative data (...		83
⚪ Smart meter data		32
🟡 Other private sector data, pleas...		24
🔵 Other data sources, please speci...		16
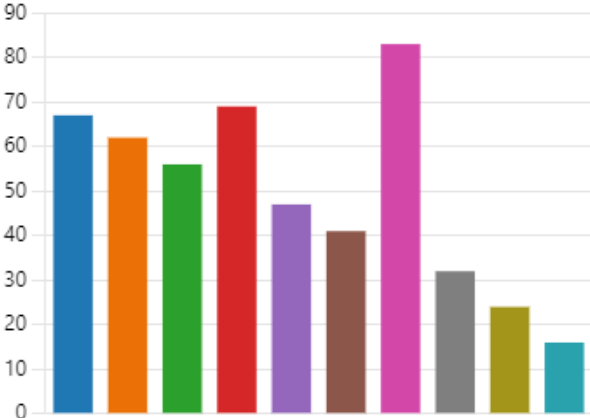
ANNEX 1 – Survey Questions

Strategic Vision

6. **Mission statement**
   Does the vision and/or mission statement of your organization include references to modernization, innovation, data science or use of alternative data sources, like Big Data? *

   ○ Yes

   ○ No

8. **High-level goals of multi-year plan**
   Does your organization have a strategy for innovation and modernization?
   *

   ○ Yes

   ○ No, but in planning stages

   ○ No

10. **High-level goals of multi-year plan**
    Please check all those topics below which are part of your innovation strategy

    ☐ Access to data from private sector

    ☐ Modernization of statistical legislation

    ☐ Use of Satellite data

    ☐ IT Cloud computing and services

    ☐ Data privacy protection

    ☐ Capacity development in data science or data engineering

    ☐ Collaboration with universities or private partnerships

    ☐ Other

Legislation

11. **Data acquisition**
    Is there specific Statistics legislation (Act or Law) in your country that supports your institute in facilitating access to privately held data, including data from private sector? *

    ○ Yes

    ○ Yes, and update planned

    ○ Tried and failed

    ○ No, but update planned

    ○ No, and no update planned

Institutional arrangements and partnerships

15. Does your organization maintain strategic relations with institutes from the following stakeholder communities? Please check all that apply.

    ☐ Government agencies

    ☐ Academic or research institutes

    ☐ Private sector companies

    ☐ Civil society organizations

    ☐ Regional or international agencies

    ☐ Cross-border partnerships with other national statistical offices

    ☐ Other

16. Does your organization coordinate and lead modernization and innovation for the national statistical system in any of the following?

    ☐ Development of data science capabilities

    ☐ Access to data

    ☐ Quality of data

    ☐ IT infrastructure

    ☐ Legal right to data use

    ☐ Privacy protection in line with government guidelines

    ☐ Facing difficulties with documentation

    ☐ Other

Data sources

18. **Data collection and data management**
    Does your government have a national data strategy? *

    ◯ Yes

    ◯ No

    ◯ No, but we have plans to enact a data strategy

19. **Data collection and data management**
    What is the role (or the planned role) of your office regarding data governance, data sharing, data linking, data quality assurance and development of related policies across all the government agencies? Please explain briefly *

20. **Alternative data sources, including Big Data or webscraping and other privately held data**
    What other data sources do you use or are you considering using in the future?

    ☐ Satellite data

    ☐ Mobile phone data

    ☐ Retail store scanner data

    ☐ Webscraping data

    ☐ Credit card / Payment card data

    ☐ Citizen generated data / Citizen science data

    ☐ Additional administrative data (Health sector, Labor market, Taxes, Criminal justice)

    ☐ Smart meter data

    ☐ Other private sector data, please specify below

    ☐ Other data sources, please specify below

Methodology and quality assurance

23. Implementation of Big Data and Data Science
Are you transforming (or planning to transform) your statistical
production process using Big Data and/or data science? *

○ Yes

○ No

Communication and stakeholder consultations

25. Emerging issues and user needs
In which ways does your institute communicate with your important
stakeholders regarding emerging issues, such as COVID-19, high inflation
or natural disasters? *

26. Emerging issues and user needs
Do you have a communication strategy? *

○ Yes

○ No

○ No, but planned

27. Emerging issues and user needs
How are you communicating results which use new technologies or new
data sources? *

Human resources

28. Capacity development
Does your office have a roadmap to develop capacity in new areas, such
as data science, data engineering or similar? *

○ Yes

○ No

○ No, but planned

30. **Recruitment**
Overall, how many staff members are there in your statistical institute or statistical department? *

    ◯   1 - 49 people

    ◯   50 - 99 people

    ◯   100 - 499 people

    ◯   500 - 999 people

    ◯   1000 - 2499 people

    ◯   2500+ people

31. **Recruitment**
Approximately how many data scientists or data engineers does your statistical institute or statistical department employ? *

32. **Recruitment**
Approximately how many new data scientists or data engineers have been hired in the last year? *

33. **Projects and Roles**
Can you give an example of a Big Data or data science project in your organization? Please describe the roles of the staff members in this project. *

34. **Projects and Roles**
Approximately how many Big Data projects are currently active in your organization? *

35. **Cultural change**
How did the introduction of innovation change the way you deliver your outputs/ results? *

36. **Cultural change**
Could you please explain the challenge, change and impact of introducing the innovation? *

37. **Cultural change**
When introducing innovation, please rate the culture change impact it had on your organization
(1 being little to no culture change impact; 5 being a large culture change impact) *
(add link to note re: explanation of introducing innovation)

1	2	3	4	5

IT Management

38. **Infrastructure**

Which of the following options describes the change of technology infrastructure in your institute for the processing of alternative data sources, like Big Data?

You can choose more than one option

- ☐ Introduction of IT Cloud services

- ☐ Increase in use of IT Cloud services

- ☐ Creation of a Data Science Lab

- ☐ Creation of a research and innovation lab

- ☐ Partnership with private sector tech provider

- ☐ Partnership with university on IT resources

- ☐ Gradual upgrading of IT infrastructure

- ☐ Other, please specify below

40. **Infrastructure**

Does your office have an IT strategy or roadmap? *

- ○ Yes

- ○ No

- ○ No, but planned

42. **Cybersecurity and privacy protection**

Does your institute comply with national government cybersecurity guidelines? *

- ○ Yes

- ○ No

45. **Cybersecurity and privacy protection**

Does your institute have data protection guidelines? *

- ○ Yes

- ○ No

47. **Cybersecurity and privacy protection**

If your institute has data protection guidelines, do these make specific provisions for the handling of large volume of granular data (Big Data), like mobile phone data? *

48. How well does the Committee of Experts on Big Data and Data Science (UNCEBD) fulfill its mandate? *

    (1 being not at all, 5 being very well)

1	2	3	4	5

49. How could the UNCEBD and its task teams support your organization better? *

50. The UNCEBD organized international conference on Big Data and data science for official statistics in 2014 (Beijing), 2015 (Abu Dhabi), 2016 (Dublin), 2017 (Bogota), 2019 (Kigali), 2020 (virtually with Statistics Korea) and 2022 (Yogyakarta). Have staff members of your office participated in these conferences? *

    ○ In all 7 conferences

    ○ More than once

    ○ Only one time

    ○ Never

51. The UNCEBD develops guidance and organizes training activities through 9 task teams. Please indicate in which task teams your office has been actively participating. *

    ☐ Task Team on use of Satellite data for agriculture statistics

    ☐ Task Team on use of Mobile Phone data for official statistics

    ☐ Task Team on use of Scanner data and webscraping for price statistics

    ☐ Task Team on use of AIS vessel tracking data for maritime transport and trade statistics

    ☐ Task Team on the use of Privacy Enhancing Technologies for official statistics

    ☐ Task Team on Training, Competencies and Capacity Development

    ☐ Task Team on Big Data for Sustainable Development Goals

    ☐ Task Team on Rural Access to All-season roads

    ☐ Task Team on Facilitating Access to privately held data

    ☐ None of these task teams

52. All statistical institutes can participate in any of the task teams. Please indicate in which task teams your office would be interested to participate (or interested to continue participating). *

- [ ] Task Team on use of Satellite data for agriculture statistics

- [ ] Task Team on use of Mobile Phone data for official statistics

- [ ] Task Team on use of Scanner data and webscraping for price statistics

- [ ] Task Team on use of AIS vessel tracking data for maritime transport and trade statistics

- [ ] Task Team on the use of Privacy Enhancing Technologies for official statistics

- [ ] Task Team on Training, Competencies and Capacity Development

- [ ] Task Team on Big Data for Sustainable Development Goals

- [ ] Task Team on Rural Access to All-season roads

- [ ] Task Team on Facilitating Access to privately held data

- [ ] None of these task teams

53. The UNCEBD organizes training and project activities through 4 regional hubs and 1 sector hub. Please indicate in the activities of which hub your office has been actively participating (indicate all that apply). *

- [ ] Regional Hub on Big Data and Data Science based in Rio de Janeiro, Brazil

- [ ] Regional Hub on Big Data and Data Science based in Hangzhou, China

- [ ] Regional Hub on Big Data and Data Science based in Kigali, Rwanda

- [ ] Regional Hub on Big Data and Data Science based in Dubai, UAE

- [ ] Sector Hub on ARIES for SEEA in Bilbao, Spain

- [ ] None of these hubs

54. All statistical institutes can participate in the training and project activities of any of the hubs (especially in your region, of course). Please indicate in which hub your office would be interested to participate (or interested to continue participating). *

☐ Regional Hub on Big Data and Data Science based in Rio de Janeiro, Brazil

☐ Regional Hub on Big Data and Data Science based in Hangzhou, China

☐ Regional Hub on Big Data and Data Science based in Kigali, Rwanda

☐ Regional Hub on Big Data and Data Science based in Dubai, UAE

☐ Sector Hub on ARIES for SEEA in Bilbao, Spain

☐ None of these hubs

55. The Data Science Leaders Network was created under the UNCEBD in 2022 (see Terms of Reference in the 2023 report of the UNCEBD). Would your office like to participate in the activities of the Data Science Leaders Network? *

○ Yes

○ No

56. The UN Global Platform became actively available to the global community of official statistics in June 2020 (see https://unstats.un.org/bigdata/un-global-platform.cshtml). This platform offers the possibility to statistical to hands-on experiment with Big Data and new technologies together with experts from around the world. Would your office like to participate in projects on the UN Global Platform? *

○ Yes

○ No

57. Based on your experience with the above, how valuable was the work of the UNCEBD to your organization? *

(1 being not valuable at all; 5 being very valuable)

| 1 | 2 | 3 | 4 | 5 |

58. Do you believe we should raise more awareness for any of the below:

☐ Task Teams (https://unstats.un.org/bigdata/task-teams/)

☐ UN Global Platform

☐ UN Regional or Sector hubs

☐ Data Science Leaders Network

59. How could the UNCEBD and its task teams improve further? What could be done differently?

60. How could the UN Global Platform improve further? What could be done differently?

61. How could the regional and sector hubs improve further? What could be done differently?

ANNEX 2 – Interview Questions

UNCEBD mandate and value proposition
- Do you have suggestions for changes/updates of the UN CEBD mandate?
- What value has the UNCEBD brought to your organisation?
- Has your organisation benefited from participation in any of the groups under the UN CEBD committee (bureau, advisory board, Global Platform Committee, DSLN network, task team or regional hub)?

Terms of Reference of task teams / regional hubs (specific to the interviewee)
- Do you have suggestions for changes/updates of the objectives of the task teams / regional hubs?
- In your view, who are the target users of the task team outputs / regional hub activities?
- What value has working in the task team/regional hub brought to your own organization?

UN Global Platform
- Has your organization used the UN Global Platform?
- Do you believe that the UN Global Platform is a useful asset for the global statistics community?
- How could we improve the platform?

Communication
- How often do you visit the UN CEBD website?
- Are there any changes that you would like to propose for the UNCEBD website?
- Have you ever participated in one of the International Conference on Big Data and Data Science for Official Statistics?
- Do you believe that we should continue with those conferences and do have suggestions for changes to the format of the conference?

Strategic Framework
- How does it relate to the Mission and Vision of your organization?
- Is the multi-year plan with strategic objectives linked with specific activities?

Organizational adaptability
- How do you view your organization in terms of strategic adaptability or robust governance system?
- Is it innovative, strong in decision making, with agile leadership?
- Does it react fast, keep up pace with changes, and in line or exceed the changing needs of your customers?

Use of new data sources
- Does your organization use non-traditional data sources?
- Is there a transformation of data collection operations?
- Are you building new and integrated data warehouses?