1. Introduction

1.1. Overall context

In 2021, EGTI approved the report of the EGTI Sub-group on Over-the-top (OTT) indicators,[1] including the following definition of OTT:

> OTT = A service
>
> - provided and delivered over the public Internet without control of the network layer, and
> - access to which is independent of a specific Internet access service.

At the 12th meeting of the ITU Expert Group on Telecommunication / ICT Indicators (EGTI) on 14 September 2021, EGTI and the ITU Expert Group on Household Indicators (EGH) also agreed that further work on the matter of OTT measurement should be conducted with joint involvement of experts representing both groups. This led to the creation of a joint sub-group (JSG), participation in which was open to all interested EGTI and EGH members.

The chair of the OTT sub-group, Mr Oliver Füg, continued as JSG Chair; Mr Winston Oyadomari was named Vice-chair as EGH rapporteur. At the Chair's request, invitations to partake in the JSG's work were extended to relevant ITU-T and ITU-D study groups. The joint subgroup consisted of experts from ARCT of Burundi, CAICT and CNNIC of China, AGCOM of Italy, the Communications Authority of Kenya, the Communications Regulatory Authority of Qatar, SITC of Saudi Arabia, TRA of Oman, ZICTA of Zambia, as well as independent subject matter experts.

1.2. Work plan

To structure the JSG work, the Chair and the Vice-chair proposed an agenda to the group that would allow measurement issues to be discussed from the perspective of each expert group, while enabling participation from both. An equal number of sessions was attributed to each perspective. The agenda was agreed at the JSG's first meeting.

Deliberations took place between May and July 2022. To work effectively in the face of time constraints, meetings were conducted on an accelerated schedule.

This report reflects the work carried out according to the agenda agreed by the JSG. The Chair and the Vice-chair have drafted the chapters representing the work linked to their respective expert group; both have read and endorsed the overall report before submitting the present version to experts' attention, which reflects comments received from JSG members.

[1] Report of the EGTI Subgroup on OTT Indicators (2021).

2. Summary of the group's work

2.1. Deliberations from a demand side perspective

The JSG had two meetings dedicated to discussions on the demand side. Below, we present the activities relating to identification of the data gap and existing sources of information, discussion of the role of household surveys and consideration of possible new indicators relevant to capturing OTT dynamics.

2.1.1. Data gap and existing information

The initial goal was to define the gap of information as perceived by the group. This was crucial to streamline the possible recommendations on indicators and to coordinate between demand and supply data sources.

Considering what is already defined by the ITU in the *Manual for Measuring ICT in Households*,[2] it was noted that the indicator HH9 (proportion of individuals using the Internet, by type of activity) stands out as a relevant measure already existent that contains items related to the subject, such as social networks, watching videos, making VoIP calls, and so on. This indicator is reported to the ITU by more than 80 member states, which makes it the 7th most reported indicator of the current set defined by the manual. While data collected in that context are currently available in many Member States, the specific activities collected might differ.[3] It is relevant to note that this indicator was not designed with the OTT subject in mind, and in-group discussions revealed that it may be difficult to agree on which of the activities would be relevant for insights on OTT usage.

Another indicator considered was the household expenditure on ICT (HH16). The group identified its use in relation to OTT to involve more analytical decisions to address, e.g., the difference between expenditures on equipment and services; which of those services are OTT; and differences in the unit of analysis (household vs. individual). Moreover, it also has a low level of reporting from member states to the ITU.[4]

The group concluded that the primary data gap to be addressed concerns the impact of traffic generated by OTT on network infrastructure.[5] While the indicator HH9 measures the proportion of people engaging in activities possibly related to OTT, in its present form, it is impractical to determine unequivocally if it indeed constitutes OTT use. Importantly, it also counts people rather than data traffic.

[2] ITU, *Manual for Measuring ICT in Households* (ITU, 2020, 3e), available at: https://www.itu.int/en/ITU-D/Statistics/Pages/publications/manual.aspx.

[3] The list is extensive, and statistics institutions might collect only part of the set of the items covered in the indicator. For an overview, see Annex 1.

[4] The low reporting rate is likely related to the need for a specific survey on household budget to enable accurate measurements on expenditure, unlike what is required for the rest of the indicators in the manual.

[5] The group noted that other topics of interest (such as the economic impact of OTTs) were outside its mandate.

To better understand how Member States currently consider OTT services, distinct ad-hoc ITU questionnaires on measuring OTT services were sent in May 2022 to Member State agencies providing supply side data and to Member State agencies providing demand side data. On the demand side, 63 responses were received, with less than a third answering that they had an existing data collection practice on OTT. The biggest challenge – cited by two-thirds of respondents – was an unclear definition of OTT services.

For further information on the current implementation of HH9 related to OTTs, the Chair prepared a second questionnaire, which was reviewed by the Vice-chair prior to being shared with the group's members. The purpose of the instrument was to gauge how the different indicator sub-items were implemented by the Member States, to what extent data collection on OTTs at national level went further and to collect any additional feedback.[6] Responses received inform the discussion in section 2.1.3 below.

2.1.2. Household surveys

The group discussed advantages and limitations of household surveys as a source of information, as well as how household surveys could extrapolate the indicators defined by the Manual and provide more information on the use of OTTs by individuals.

Household surveys allow data disaggregation by variables of interest, such as age, gender, income level, etc. This is especially relevant for policy-making purposes, as it reveals disparities and informs policy action.

Another relevant aspect is the existence of knowledge and experience accumulated in collecting ICT indicators in household surveys in line with the ITU Manual. Other examples of such accumulated knowledge are the EGH Forum and its annual meetings, which play a key role as standards reference and as a clearing house for experience sharing and best practices dissemination. Most Member States have had at least one survey reported to the ITU, while a relevant portion report data regularly. Finally, it is worth stressing the already existent process of data collection, consolidation, and reporting from Member States to ITU in the form of the Short and Long Questionnaire.

As for limitations, three key aspects were brought up for discussion. The first one is related to the lack of funding since surveys are the most expensive of all data sources. In some member states they might not always be available or might not be conducted with regular periodicity. The second aspect is questionnaire length, which is already a challenge for data producers as the demands of information are getting broader in scope and deeper in detailing aspects of ICT adoption by individuals. The third is related to the capability of respondents to understand the questions and recall the information. This is particularly relevant with regard to OTT and the defined data gap of OTT traffic, since individuals will neither automatically recognize OTTs and their different categories, not be able to estimate the amount of data consumed by type of activity or platform.

[6] The instrument is included as Annex 1 to this report. Further responses are encouraged as per the

2.1.3. Possibilities for new household indicators

Based on the deliberations set out above (see section 2.1.2), the group concluded there was a need for data sources other than household surveys. The possibility to collect information beyond what is defined in the Manual was highlighted in this regard. Accordingly, the group discussed possible indicators to expand the measurement of user habits, such as: frequencies, payment, specific platforms, etc.

Two country experiences were shared with the group.

In Saudi Arabia, the national ICT Household Survey has indicators inquiring about the specific platforms the respondents use for online gaming, social networks, VoIP, video streaming services and cloud storage. The instrument also enquires about the platforms children use for study and learning, communication, and video sharing.[7]

In Brazil, a module of questions in the corresponding survey was designed to understand cultural activities conducted on the Internet. The indicators focus on three specific cultural activities: listening to music, watching movies, and watching series. For each of those activities, respondents were asked about frequency, payment, type of content and origin (national or international). Since 2017, this set of questions has been collected every two years using the items from the HH9 indicator as its filter questions. While the OTT topic was not present in the design and formulation of the module, it sheds some light on the habits of Internet users on the consumption of multimedia, which is a relevant driver in data usage. This case study underlined the potential for, and need to, examine existing data collection practices at Member State level to identify the potential contribution to addressing the data gap.[8]

The group agreed to invite EGH members to share their practices which would support the effort to identify other relevant data collection experiences in the consolidation of this report and beyond. While the cases discussed by the group do not directly solve the data gap on traffic, they serve as examples on how to increase the information available about consumer behavior, which could potentially serve as inputs for modelling approaches or be used as proxies to capture trends in data consumption from the user perspective. Circumstances did not allow the group to pursue possible linkages between empirical measurements and traffic modelling or trend projections in depth, but experts did consider that modelling based on assumed traffic-per-usage estimates might both substantially increase complexity and impair uniform implementation.

2.2. Deliberations from a supply side perspective

The JSG organized two meetings to discuss data collection from the perspective of OTT supply. These sessions featured a review of the adopted working definition and current data collection practices, a discussion of the challenges related to data collection and consideration of a case study on how to approach OTT communications data collection in practice. We present each of these in turn.

[7] The specific questions and examples are available in Annex 2.

[8] Tables of results from the latest edition are available in Annex 3.

2.2.1. Working definition and data collection practices review

With the assistance of the Secretariat, the JSG surveyed OTT data collection practice among EGTI members, enquired into applicable OTT frameworks and possible remarks about the working definition, set out in section 1.1 above, and sought to identify barriers to data collection.

71 responses, covering all world regions, were received to the ad hoc ITU questionnaire on measuring OTT services of May 2022. 75% of respondents indicated that they did not have an OTT definition, while only 1/8 did. 94% considered the working definition either accurate/appropriate or somewhat accurate/ appropriate. A minimal number of respondents considered it inappropriate. Overall, the survey process clearly confirmed the working definition from a supply side perspective. Respondents agreed that the principal challenge resided in implementing data collection. Accordingly, more than 75% of respondents indicated not having a standing data collection practice, while another approx. 10% were unsure.

In this respect, the survey unequivocally identified **absence of a solid legal foundation as the key impediment to data collection**. 69% of respondents indicated that either an adequate basis was missing, or doubts persisted due to a lack of clarity. More than half of respondents (57%) pointed to technical challenges as a barrier to collecting data on OTTs to address the data gap identified.

2.2.2. Discussion of challenges to data collection

The JSG discussed challenges to data collection along three axes, viz. in terms of technical, legal and commercial issues that would have to be addressed. This selection was chosen to provide a principled approach to OTT data collection while at the same time capturing and responding to feedback received from the questionnaire.

From a **technical perspective**, the JSG identified flow analysis, encryption, monitoring facilities and technology developments as principal points of interest that would have to be addressed successfully to enable data collection. Discussion of a case study of communications service *Skype* was engaged to illustrate the aforementioned dimensions. In view of the limited time available, the JSG satisfied itself of their relevance without, however, being able to derive any operational recommendations. Participants agreed that monitoring of further developments in this field appeared merited as well as exchange of best practices for how to deal with the different technical aspects identified.

Echoing survey responses, the JSG identified supervisory and data collection competences as one of the key **legal challenges** to be addressed in the context of OTT data collection. The group noted possible differences in this regard between national statistical and regulatory authorities, which need to be considered when designing international data collection. Secondly, the group underlined the role of data protection rules and their sectoral variations as relevant framework conditions for OTT data collection, notably where data sourcing would rely on provisioning by OTT providers or telecommunications operators. Relatedly, legal frameworks for storing, combining, analysing and reanalysing collected data would have to

be taken into account. Contractual relations between ecosystem participants were finally identified as of particular relevance where a dedicated regulatory framework for OTTs was lacking and data collection and use is principally governed by contract. This and other aspects were illustrated by a case study of an internet exchange point in a specific world region[9] and the rules governing traffic data disclosure, which excluded the exchange point as a source of OTT traffic data. It being beyond the possibilities of the JSG to validate this finding for other world regions, participants noted its relevance to further exploratory work, especially in a comparative perspective.

Commercial challenges to OTT data collection discussed by the group concerned implementation costs of data collection (including associated climate impact), uniformity of implementation, corporate structure and its impact on data availability and variations in the commercial organization of OTT services. For want of a dedicated case study, the JSG confined itself to recognising the relevance of the aspects identified and noted the desirability of more detailed illustration.

2.2.3. Discussion of a sample approach to OTT data collection

As the last element of its deliberations from a supply-side perspective, the JSG considered a case study proposed by the Chair.[10] This case study served to illustrate a possible approach to collecting data about services that would qualify as OTT communications under the working definition. The case study was further taken up to provide an example of how the key aspect of appropriate statutory authority for OTT data collection, one of the key legal challenges identified (see sections 2.2.1 and 2.2.2 above), had been practically addressed.

The group noted the special setting of the case study in the regionally specific legislative framework of the European Union applicable, at least in part,[11] to OTT communications. While considering particularly the aspects of competence attribution and questionnaire design process instructive and finding conceptual overlaps with discussions held by the 2021 OTT sub-group in arriving at its proposed working definition,[12] the JSG concluded that the approach in its current form would not appear to allow addressing the data gap identified. However, participants did agree that it would be meaningful to monitor implementation of the case as well as to invite further case studies from this and other regional contexts to facilitate further learning and possibly collaboration in instrument design, notably where cases included or specifically targeted OTT traffic data.

[9] The case study concerned the Brazilian body *IX.br,* representing major Brazilian Internet exchange points.

[10] The case study concerned consultations on draft survey instruments for OTT data collection conducted by the German telecommunications regulatory authority, *Bundesnetzagentur*.

[11] The group did not pursue any legal clarification of whether definitions under EU law exhaustively cover the services relevant for measurement of OTT communications.

[12] See note 1 above, at 5f.

3. Conclusions and outlook

3.1. Conclusions from a demand side perspective

1. The group considers the data gap as the volume of OTT traffic generated and its impact on Internet infrastructure.
2. In the group's assessment, it is currently not feasible to collect these data through household surveys due to several limitations, most important among which is the fact that the Manual does not include a notion of OTT.
3. Notwithstanding these limitations, it may be possible that reporting of HH9 can help to identify and refine categories of relevant online services, including OTTs. This would also enhance international comparability of the data currently available. It is therefore recommended that Member States collect and report the HH9 indicator, including, where appropriate, methodology for taking account of OTTs.
4. The examples provided within the subgroup (see section 2.1.3 above) identified other relevant dimensions of user behavior that indicate the possibility of building on existing data and potentially adopting a modelling approach to derive OTT traffic and extrapolations thereof. This possibility should be further discussed at expert level.
5. The subgroup also invites experience sharing on data collection practices regarding OTT beyond what is defined in the Manual and reported to ITU, like the examples brought up within the group.

3.2. Conclusions from a supply side perspective

1. The JSG concludes that the OTT definition adopted by EGTI for measurement purposes constitutes an appropriate starting point for developing data collection approaches, including attempts to address the data gap from both a supply and demand side perspective.
2. Given its technical nature, it is clear that the definition cannot be directly administered in survey instruments targeting households. Also on the supply side, there is a need to further elaborate specifications for relevant categories of OTTs to ensure appropriate delimitation of data collection exercises and comparability of their results.
3. The JSG takes the preliminary view that technical challenges of data collection should, as a matter of principle, be surmountable. At the time of reporting, the most important set of challenges to be overcome appear to relate to the necessary empowerment of authorities to collect or request relevant traffic data and/or the creation of a framework under which such data is made available.

4. Within the *Handbook for the Collection of Administrative Data on Telecommunications / ICT*, the indicator on VoIP subscriptions provides a relevant starting point for verifying technical measurement capacity at the level of administrations.[13] The indicator today, however, is only available to a limited extent. Future work on OTT measurement could involve jurisdictions currently implementing the indicator to share experiences and best practices.

5. The JSG noted that that the indicator on total domestic Internet traffic (bandwidth) is no longer collected.[14] Together with the findings from the group's exploratory case study, this suggests that involvement of IXPs as a possible source in the collection of traffic data would need to be given in-depth consideration. To this end, a systematic study of the situation obtaining in different world regions would be desirable.

6. More generally, the JSG considers that additional efforts should be dedicated to mapping evolving data collection practices relating to OTTs at various levels. This should notably include methods of innovative data collection currently beyond the scope of existing EGTI guidance, so as to raise awareness and provide a cross-jurisdictional forum for exchange and discussion.

3.3. Outlook

Based on the work conducted, the Joint Sub-group on OTT indicators (JSG OTT) finds it reasonable to conclude that at the current state of measurement practice and methodological development, there is as yet an insufficient basis to issue general recommendations to the Expert Groups on specific indicators to collect data on OTTs. This finding applies both from the vantage point of demand and from the vantage point of supply.

At the same time, the question of the amount of OTT traffic and its impact on networks retains its importance under the impression of the Covid pandemic and its implications. Estimates of global network traffic for 2021 suggest that six companies operating OTTs as defined by EGTI accounted for 57% of total traffic.[15]

Discussions in the group and feedback received in response to surveys administered with the help of the Secretariat have confirmed the appropriateness of the OTT definition adopted by EGTI in 2021. At the same time, the group notes that appropriate adjustments may be required to ensure effective implementation where respondents lack requisite technical understanding.

The group has comprehensively mapped challenges to the implementation of data collection strategies concerning OTTs. In addition to the technical, legal and commercial dimensions that have to be addressed, and to the special role of competence attribution in administering

[13] ITU, *Handbook for the Collection of Administrative Data on Telecommunications / ICT* (ITU, 2020, 3e), available at: https://www.itu.int/en/ITU-D/Statistics/Pages/publications/handbook.aspx.

[14] See definition for Indicator 5.16: Domestic Internet traffic, which refers to the average volume of traffic, expressed in gigabits per second (Gbit/s), exchanged over public Internet exchanges in a year. ITU currently collects data on fixed- and mobile-broadband traffic (indicators 5.17 and 5.18), measured at the end-user point.

[15] Sandvine, *The Global Internet Phenomena Report* (Sandvine, 2022), at 14.

surveys on OTTs, the group's work has also highlighted a challenge deriving from existing survey instruments and data collection guidance that may have been conceived prior to the emergence of OTTs. This may mean that existing data collection practices already capture, in whole or in part, certain aspects of OTT in the sense of the EGTI definition. While challenging in their own right, such overlaps may also help to promote targeted reflection on the reach and limits of existing data collection practices and their synergistic potential with regard to filling the OTT traffic data gap.

Cases discussed by the group further illustrate that administrations have taken steps to innovate beyond established guidance, either to capture specific OTT-related aspects or to address wider questions that substantively also relate to OTT measurement. While no exemplar has been identified that addresses the issue of data traffic measurement, the group believes that **two strands of activity merit further consideration to build on work that has already been or continues to be carried out**.

As detailed above,[16] the JSG administered a survey to members on the domestic implementation of HH9 including possible extensions. The group believes that completion of this instrument by a larger number of Member States will provide important backgrounding and input to OTT indicator development, including beyond the question of traffic measurement, notably where responses would reflect different situations of OTT usage. This could prospectively foster greater clarity about options for demand side indicator development and conceivably provide a basis for possible modelling and/or extrapolation approaches drawing on behavioural data.

Secondly, the group considers that it will be relevant to continue work to develop specific guidance on the collection of traffic data related to OTT communications. This task, a central ambition for the continuation of work previously conducted by the SG OTT, could not effectively be pursued this year within a changed setting and the added objective of ensuring exchange across expert groups. However, the specific case discussed (see section 2.2.3) as well as information shared informally as part of the group's deliberations suggests that there will be developments in the course of 2023 that are of direct relevance to the JSG's interests in closing the data gap of OTT traffic data. Ensuring cross-fertilization between such developments at Member State level and continued exchange at expert group level could make a substantial contribution to realising the ambitions of capturing the dynamics of OTT traffic.

Both of the aforementioned suggested lines of activity underline the importance of active involvement of EGTI and EGH Members in the group's work. Enquiries conducted by the EGTI subgroup on OTT in 2021 and the JSG this year lead the group to consider that OTT traffic measurement is unlikely to lend itself to rapid, widespread resolution. At the same time, the group observes increasing dynamism and interest around the collection of data relating to OTTs more generally. As Member States find themselves at different developmental stages, the group believes that steps should be taken to make knowledge already gained accessible and provide for a forum of exchange on practical questions.

[16] See section 2.1.1.

The JSG therefore invites Member States to proactively share output reports, methodological notes and survey instruments relating to OTTs, as well as any other materials they consider relevant, to build an international OTT information and knowledge repository. EGTI and EGH could define contribution cycles and commit their members to participate in this exercise.

The group also suggests that for a possible extension of its mandate, participation of at least one representative from each world region should be aimed for, both to guarantee appropriate representativeness of deliberations and to facilitate links with international regional organisations taking an interest in questions of OTT measurement.[17]

Beyond these lines of activity, the group notes the **potential for further work on questions of a more original nature**, i.e., without an already established basis in EGTI and EGH work. In this regard, the group has highlighted questions of non-traditional data collection (e.g., voluntary data provisioning by OTT providers[18]) and of data triangulation (e.g., possible options for approaching the data gap from supply and demand perspectives concomitantly).

[17] Additionally, continued work should, as far as possible, benefit from appropriate representation of technical, legal and commercial expertise to address the various challenges identified by the Joint Sub-group.
[18] Including implementation, statutory interfaces and methodological aspects.

Annex 1: Survey on demand-side OTT data collection

This survey contains four sections:

1. Current implementation of HH9
2. Current additional OTT data collection beyond HH9
3. Suitable OTT demand-side indicator(s)
4. Additional remarks

Sections 1 and 2 concern standing practices within ITU Member States. Section 3 may be viewed from that perspective or from a cross-jurisdictional perspective in a manner compatible with the *ITU Manual for Measuring ICT Access and Use by Households and Individuals (2020 edition)*.[19] Section 4 allows for additional observations not covered by the preceding sections.

Please submit any questions and responses to the JSG Chair and Vice-chair at:
oliver.fueg@telefonica.com and winston@nic.br.

Thank you for your contribution.

1. Current implementation of HH9

Model question	**For which of the following activities did you use the Internet for private purposes in the last three months (from any location)? Please tick all that apply.**

Do you implement HH9…

Fully	
Partially	
Not at all	

If you do not implement HH9, please continue with section 2.

Otherwise, please continue overleaf by providing details on individual indicator components.

[19] Reference is made to the English language edition of the Manual corresponding to the working language of the Joint Sub-Group. Please highlight any relevant discrepancies between this and other editions where appropriate in this questionnaire.

JSG OTT Survey on demand-side OTT data collection

In the below table, please indicate how individual indicator dimensions and sub-indicators of HH9 are implemented, detailing question wording and OTT service examples.[20] If a given element is subject to further specification (additional services, usage frequency, etc.), please state this in the third and include any comments in the fourth column.[21] Where a sub-indicator marked by an asterisk (*) is not included because of it being covered by national implementation of HH15, please state so in column 2.

Indicator dimension / sub-indicator	National implementation	Further specification (incl. additional services)	Comments (incl. degree of OTT approximation)
Access to information			
Getting information about goods or services			
Seeking health-related information (on injury, disease, nutrition etc.)			
Getting information from general government organizations[22]			
Using services related to travel or travel-related accommodation			
Downloading software or applications (includes patches and upgrades, either paid or free of charge)*			
Reading or downloading newspapers, magazines or electronic books in a digital format			
Communication, civic participation and collaboration			
Sending or receiving e-mail*			
Making calls (telephone and video calls over the Internet/VoIP using e.g. SKYPE, WHATSAPP, VIBER, ITALK, etc.)			

[20] Please ensure availability of an English language working translation. Examples of OTT services are identified in SMALL CAPS in the left-hand column under the relevant sub-indicator. Please indicate whether questions are open-ended and allow respondents to indicate alternative services or further feedback.

[21] Please include in your comments an assessment of whether you consider the sub-indicator to be a suitable approximation of OTT use (fully/partially/not at all).

[22] General government organizations should be consistent with the SNA93 (2008 revision) concept of general government. According to the SNA "… the principal functions of government are to assume responsibility for the provision of goods and services to the community or to individual households and to finance their provision out of taxation or other incomes; to redistribute income and wealth by means of transfers; and to engage in non-market production." (General) government organizations include central, state and local government units.

Indicator dimension / sub-indicator	National implementation	Further specification (incl. additional services)	Comments (incl. degree of OTT approximation)
Participating in social networks[23] (e.g. FACEBOOK, TWITTER, INSTAGRAM, SNAPCHAT, etc.)			
Making an appointment with a health practitioner via the Internet (i.e. website, app, software)			
Interacting with general government organizations (downloading/requesting forms, completing/lodging forms online, making online payments and purchasing from government organizations etc.)			
Taking part in consultations or voting via the Internet to define civic or political issues (urban planning, signing a petition etc.)			
Accessing or posting opinions via any device on chat sites, blogs, newsgroups or online discussions (e.g. on civic or political issues, general interest topics) that may be created by any individual or organization			
Electronic commerce, trade, and transactions			
Purchasing or ordering goods or services (purchase orders placed via the Internet whether or not payment was made online; excludes orders that were cancelled or not completed; includes purchasing of products such as music, travel and accommodation via the Internet)			

[23] Creating user profile, posting messages or other contributions to a social network.

Indicator dimension / sub-indicator	National implementation	Further specification (incl. additional services)	Comments (incl. degree of OTT approximation)
Selling goods or services (e.g. eBAY, MERCADO LIBRE, FACEBOOK, AMAZON, ALIBABA, etc.)			
Internet banking (includes electronic transactions with a bank for payment, transfers, etc. such as M-PESA, or for looking up account information; excludes electronic transactions via the Internet for other types of financial services such as share purchases, financial services and insurance)			
Learning			
Doing an online course (in any subject)			
Consulting wikis (e.g. WIKIPEDIA etc.), online encyclopaedias or other websites for formal or informal learning purposes			
Professional life			
Looking for a job or sending/submitting a job application (includes searching specific websites for a job; sending/submitting an application online)			
Participating in professional networks[24] (e.g. LINKEDIN, XING, BARK, OPPORTUNITY, JOBCASE)			
Entertainment, digital content consumption			
Listening to web radio (either paid or free of charge)			

[24] Professional networks are also seen in the broader context of social networking and have the same requirement of profile creation, contributing through messaging or chat, or uploading text or audio-visual content files.

JSG OTT Survey on demand-side OTT data collection

Indicator dimension / sub-indicator	National implementation	Further specification (incl. additional services)	Comments (incl. degree of OTT approximation)
Watching web television (either paid or free of charge)			
Streaming or downloading images, movies, videos or music; playing or downloading games (either paid or free of charge)			
Digital content creation			
Uploading self/user-created content to a website to be shared (text, images, photos, videos, music, software, etc.)			
Using storage space on the Internet to save documents, pictures, music, video or other files (e.g. GOOGLE DRIVE, DROPBOX, WINDOWS SKYDRIVE, ICLOUD, AMAZON CLOUD DRIVE)			
Using software run over the Internet for editing text documents, spreadsheets or presentations			

2. Current additional OTT data collection beyond HH9

If data are currently collected on OTT usage beyond what is contained in HH9, please specify these data collection efforts below, offering the maximum amount of information available (section 2.1). If not, please continue with section 3.

If these data are published, please also include details on their availability (section 2.2).

2.1. Additional OTT indicators

Please state which additional indicators you use for collecting data on OTTs that are not included in section 1 above, including supply side indicators.

2.2. Data availability

Please indicate in what ways the data collected in line with the response under section 2.1 above are made available, either by way of dedicated reporting, data release or other means.

3. Suitable OTT demand-side indicator(s)

Please indicate below what you would consider an appropriate OTT data collection approach in a household survey context or other demand-side measures, including possible suggestions on how to evolve existing core indicators.

Upon completion please continue with section 4.

4. Additional remarks

Please include here any additional remarks that could not be accommodated in sections 1 to 3 above.

Annex 2: Additional questions on OTT services – Saudi Arabia

18		
What devices do you use for online gaming?	Multiple Choice	
Playsation	☐	
Xbox	☐	
Switch	☐	
PC/Laptop (Steam)	☐	
Smart Phones(Smart Devises, Taplets: iPad Iphone Android)	☐	
Other.	☐	

Which of the following online social networks have you used in the past 3 months? **(Check all that applies)**	Multiple Choice
WhatsApp	☐
Facebook	☐
Twitter	☐
YouTube	☐
LinkedIn	☐
Instagram	☐
Snapchat	☐
Telegram	☐
Line	☐
Pinterest	☐
TikTok	☐
imo	☐
Facebook Messenger	☐
I don't use any online social network	☐

Additional questions on OTT services – Saudi Arabia (Annex 2)

What VoIP apps do you use to make your voice/video calls	Multiple Choice
Snapchat	☐
Imo	☐
Facetime	☐
Line	☐
Skype	☐
Google Due	☐
Facebook Massenger	
Google Hangout	

What Streaming service do you use	Multiple Choice
Shahid	☐
OSN+	☐
Starzplay	☐
Netflix	☐
Desiny+	☐
Amazon Prime	☐
Other	
None	

What Cloud storge service do you use	Multiple Choice
Google Drive	☐
OneDrive	☐
Dropbox	☐
icloud	☐
Other.	☐
None	☐

Additional questions on OTT services – Saudi Arabia (Annex 2)

What are the different apps or programs that your children in the age range of 1-19 years use for studying / learning?	Multiple Choice
Youtube	○
MS Teams	○
Skype	○
Zoom	○
Madrasati	○
Google Hangouts	○
None of above	○

What are the different apps or programs that your children in the age range of 1-19 years use social networking / Calling and communcation?	Multiple Choice	
Snapchat	○	
Whatsapp	○	
Twitter	○	
Instagram	○	
Facebook	○	
Tik Tok	○	
None of above	○	

What are the different types of contents that your children in the age range of 1-19 years watch on "video-sharing platforms"? Example: Youtube, Tiktok, Twitch, etc.
Funny/jokes/pranks
Music videos / Nursery rhymes
Games tutorials / gamers
Cartoons/animations
Vloggers/influencers
Videos that help with schoolwork
Tutorials about hobbies/interests
Films / Series / Programmes
Sports/football

Annex 3: List of indicators for cultural activities module - Brazil

TC1 – Frequency of listening to online music

TC2 – Payment to listen to online music

TC3 – Origin of the music listened to online

TC4 – Payment to download music

TC5 – Type of videos watched online

TC6 – Type of content of the videos watched online

TC7 – Type of platform used to access videos watched online

TC8 – Frequency of watching online movies

TC9 – Payment to watch online movies

TC10 – Origin of the movies watched online

TC11 – Payment to download movies

TC12 – Frequency of watching online series

TC13 – Payment to watch online series

TC14 – Origin of the series watched online

TC15 – Payment to download series

TC16 – Type of content created and posted online

TC17 – Reason for posting content they created online

TC18 – Payment received for posting content they created online

TC19 – Information searched online to carry out in person cultural activities

Results can be downloaded at:
https://cetic.br/media/microdados/618/ict_households_2021_individuals_tables_xlsx_v1.0.zip