



ITU Asia-Pacific ICT Indicators Workshop

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Session 7.2: Quality of service, traffic, revenue, investment, employment and Pay TV indicators

ICT Data and Statistics Division
Telecommunication Development Bureau
International Telecommunication Union

Quality of service (QoS)

- Fixed telephone:
 - Faults per 100 fixed-telephone lines per year
 - Percentage of fixed-telephone faults cleared by next working day

- Mobile-cellular services:
 - Mobile-cellular unsuccessful call ratio
 - Mobile-cellular dropped call ratio
 - Complaints per 100 mobile-cellular subscriptions

- Fixed broadband
 - Complaints per 100 fixed (wired)-broadband subscriptions
 - Service activation time for fixed (wired)-broadband service

Mobile-cellular unsuccessful call ratio (i146u)



- *Mobile-cellular unsuccessful call ratio* refers to the ratio of unsuccessful mobile-cellular calls to the total number of mobile-cellular call attempts in a given year. An unsuccessful call is a call attempt to a valid number where (a) the call is not answered, (b) there is no called party busy tone, and (c) there is no ringing tone on the caller's side within 40 seconds from the moment when the last digit of the called number is received by the network. The caller must be within coverage of a mobile-cellular network.

Mobile-cellular dropped call ratio (i146d)



- *Mobile-cellular dropped call ratio* refers to the proportion of incoming and outgoing mobile-cellular calls which, once they have been correctly established and therefore have an assigned traffic channel, are dropped or interrupted prior to their normal completion by the user, the cause of the early termination being within the operator's network.

Complaints per 100 mobile-cellular subscriptions (i146c)

- *Complaints per 100 mobile-cellular subscriptions* refers to the number of complaints related to the provision of mobile-cellular services received in a given year, divided by the total number of active mobile-cellular subscriptions, multiplied by 100. Statistics should include all complaints related to the provision of mobile-cellular services (including voice, SMS and data) received in the given year, regardless of the validity and subject of the complaint. Where more than one complaint is made by the same customer on the same subject, each instance of the complaint should be counted separately. If a customer complains again before an existing complaint has been closed, then this should not be treated as a separate complaint, but as a continuation of the first unclosed complaint.

Complaints per 100 mobile-broadband subscriptions (i146mw)



- *Complaints per 100 mobile-broadband subscriptions* refers to the number of complaints related to the provision of mobile-broadband services received in a given year, divided by the total number of active mobile-broadband subscriptions, multiplied by 100. Statistics should include all complaints related to the provision of mobile-broadband services received in the given year, regardless of the validity and subject of the complaint. Where more than one complaint is made by the same customer on the same subject, each instance of the complaint should be counted separately. If a customer complains again before an existing complaint has been closed, then this should not be treated as a separate complaint, but as a continuation of the first unclosed complaint.

Complaints per 100 fixed (wired)- broadband subscriptions (i147c)



- *Complaints per 100 fixed (wired)-broadband subscriptions* refers to the number of complaints related to the provision of fixed (wired)-broadband services received in a given year, divided by the total number of fixed (wired)-broadband subscriptions, multiplied by 100. Statistics should include all complaints related to the provision of fixed (wired)-broadband services received in the given year, regardless of the validity and subject of the complaint. Where more than one complaint is made by the same customer on the same subject, each instance of the complaint should be counted separately. If a customer complains again before an existing complaint has been closed, then this should not be treated as a separate complaint, but as a continuation of the first unclosed complaint.



Service activation time for fixed (wired)- broadband service (in days) (i147t)

- *Service activation time for fixed (wired)-broadband service* refers to the time from the date of application to the date of service activation. The average service activation time for all new applications received within the given year should be provided.



Traffic

- Fixed telephone: domestic, international minutes
- Mobile cellular: domestic, international minutes and SMS
- Data traffic (**1st ITU collection 2013**):
 - Fixed (wired)- broadband Internet traffic (exabytes)
 - Mobile-broadband Internet traffic (inside country)
 - Mobile-broadband Internet traffic (outside, roaming out)

Measured at the end-user access point

Excl. walled-garden, wholesale traffic, IPTV/CATV



Fixed (wired)- broadband Internet traffic

Fixed (wired)- broadband Internet traffic (**exabytes**) refers to traffic generated by fixed broadband subscribers measured at the end-user access point. It should be measured adding up download and upload traffic. This should exclude wholesale traffic, walled garden, IPTV and cable TV traffic.



IDI 2018

Mobile-broadband Internet traffic (within the country)



Mobile-broadband Internet traffic (within the country) refers to broadband traffic volumes originated within the country from 3G networks or other more advanced mobile networks, including 3G upgrades, evolutions or equivalent standards in terms of data transmission speeds.

Traffic should be collected and aggregated at the country level for all 3G or more advanced mobile networks within the country. Download and upload traffic should be added up and reported together. Traffic should be measured at the end user access point. Wholesale and walled-garden traffic should be excluded. The traffic should be reported in **exabytes**.



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Big bites!

Unit	Value	Size
bit (b)	0 or 1	1/8 of a byte
byte (B)	8 bits	1 byte
kilobyte (KB)	1000^1 bytes	1,000 bytes
megabyte (MB)	1000^2 bytes	1,000,000 bytes
gigabyte (GB)	1000^3 bytes	1,000,000,000 bytes
terabyte (TB)	1000^4 bytes	1,000,000,000,000 bytes
petabyte (PB)	1000^5 bytes	1,000,000,000,000,000 bytes
exabyte (EB)	1000^6 bytes	1,000,000,000,000,000,000 bytes
zettabyte (ZB)	1000^7 bytes	1,000,000,000,000,000,000,000 bytes
yottabyte (YB)	1000^8 bytes	1,000,000,000,000,000,000,000,000 bytes

Can also use online conversion calculators but check by recalculating.

Quiz

- If mobile broadband Internet traffic adds up to 5,286,000 Gigabytes, how should this be reported?
- What if it was 49,802,881 Terabytes?






Revenue

- Since 1960, revenue from telecommunications
On average 141 economies reported
- Since mid-1980's, revenue from mobile services
139 economies reported

Issue: harmonization of data reported in view of international comparisons

Methodology

- ITU Handbook 
- EGTI reviewed the definitions in 2012
- Chapter 4 in MIS 2012 analysed revenue and investment data
- Input from international organizations



Methodological note

Methodology for the collection of revenue and investment data on telecommunications



Background

This methodological note provides detailed guidelines for the collection of internationally comparable data on revenue from, and investment in telecommunication services.¹ It covers three main indicators: (i) Revenue from telecommunication services, (ii) Revenue from mobile services, and (iii) Annual investment in telecommunication services. The methodology provided reviews and comments the information on these indicators included in the ITU Handbook for the Collection of Administrative Data on Telecommunications/ICT by comparing the definitions of the indicators used in 2012 within the ITU Expert Group on Telecommunications/ICT Indicators (EGTI), as well as additional contributions from international organizations.² It also benefits from the aggregated input from ITU 2012 global data collection of these indicators from operators' annual reports³ and the lessons learned about the international harmonization of these data.

ITU has been collecting data on revenue from telecommunication services since 1962,⁴ and on investment in telecommunication services since 1965.⁵ ITU data are collected through annual questionnaires sent to national administrations, and collect these indicators from operators, and aggregate the data at global level. Revenue and investment data provide an overview of the economic dimension of the telecommunication sector, its structure and the capital expenditure flows that underpin telecommunication development.

Revenue and investment data from telecommunication operators are widely available through operators' annual reports. In addition, data for the telecommunication sector aggregated at a national level are often collected by regulators or collected as part of their regular data collection exercises, and also made public. Even if not published, data are usually available internally through administrative records. Confidentiality issues arise in most cases however by ensuring data confidentiality at an operator level and publishing only aggregate values for the sector in those countries where unreported

¹ Throughout the document, the terms 'telecommunication' and 'telecommunication services' are used interchangeably.

² Available at http://www.itu.int/ITU-T/ict_ind_2011

³ EGTI is ITU's expert group on indicators for the collection of administrative data on telecommunications/ICT. A data collection from operators is a topic at ITU Member and experts in the field of ICT statistics and data collection. It works through an online discussion forum (http://www.itu.int/ITU-T/ict_ind_2011) and reports periodically back to the Global Telecommunications/ICT Indicators Symposium (GTI).

⁴ The following international organizations provided comments on this issue: the European Commission, IMF, OECD and UNCTAD.

⁵ In the case of revenue from mobile services, ITU has been collecting data since the mid-1990s, before previously mobile services had little relevance in terms of revenues.



Telecommunications in ISIC 4

Division 61

Telecommunications includes businesses that operate, maintain and provide access to telecommunication networks. Resellers of telecommunication services are also included.

→ Content & media sector

Convergence

- Telecommunications or content and media sector?

Rule:

If a business engages both in the creation of content and its distribution through telecommunication networks, revenue and investment data should be reported only for those activities that relate to the distribution of content, and exclude those that relate to the creation of content



Revenue from all telecommunication services

- Revenue from all telecommunication services refers to revenue earned from retail fixed-telephone, mobile-cellular, Internet and data services offered by telecommunication operators (both network and virtual, including resellers) offering services within the country during the financial year under review.
- It includes retail revenues earned from the transmission of TV signals
- It excludes revenues from TV content creation.
- Any deviation from the definition should be specified in a note, including clarifications on what TV revenues are included/excluded (e.g. IPTV, cable TV, pay satellite and free-to-air TV).

Revenues

- Breakdowns: Total / mobile
- Main issues:



Additional breakdowns not comparable because of \neq revenue allocation

	INCLUDED
Retail revenues from residential customers	YES
Retail revenues from business customers	YES
Wholesale revenues, e.g. interconnection revenues	NO
Revenues from resellers and mobile virtual operators	YES
VAT and excise taxes	NO
Corporate taxes and administrative fees, e.g. numbering fees	YES (not to be deducted from total revenues)
Revenues from device sales and rents	NO
Revenues from added value services, e.g. premium SMS	YES



Investment

- Since 1965, investment in telecommunication : 128 economies reported
- Only total investment →
- Definition of investment
≈ gross fixed capital formation (as in SNA 2008)

Difficult to allocate investment to services

investment made by entities providing telecommunication networks and/or services (including fixed, mobile and Internet services, as well as the transmission of TV signals) **for acquiring or upgrading fixed assets (usually referred to as CAPEX) less disinvestment owing to disposals of fixed assets**

Investment

- Main issues

	INCLUDED
Additions less disposals of tangible fixed assets	YES
Additions less disposals of intangible fixed assets	YES
Investment from national-owned operators in the country	YES
Investment from foreign-owned operators in the country	YES
Investment from national-owned operators outside the country	NO
Licence fees	NO
R&D expenditures	YES



Persons Employed

- Persons employed in full-time equivalents

Persons employed in full-time equivalents refers to the total number of persons, in full-time equivalent (FTE) units, employed by telecommunication operators in the country for the provision of telecommunication services, including fixed-telephone, mobile-cellular, Internet and data services.

- This indicator excludes staff working in broadcasting businesses that offer only traditional broadcasting services. Part-time staff should be expressed in terms of full-time staff equivalents (FTE).



Persons Employed

- Persons employed by all telecommunication operators, female

Refers to the total female, in full-time equivalent (FTE) units, employed by telecommunication operators in the country for the provision of telecommunication services, including fixed, mobile and Internet services.

–This indicator excludes staff working in broadcasting businesses that offer only traditional broadcasting services.



Persons Employed

Definition of Full-time equivalent:

Full-time equivalent employment is the number of full-time equivalent jobs, defined as total hours worked divided by average annual hours worked in full-time jobs.

Source Publication: SNA 17.14[15.102.17.28]

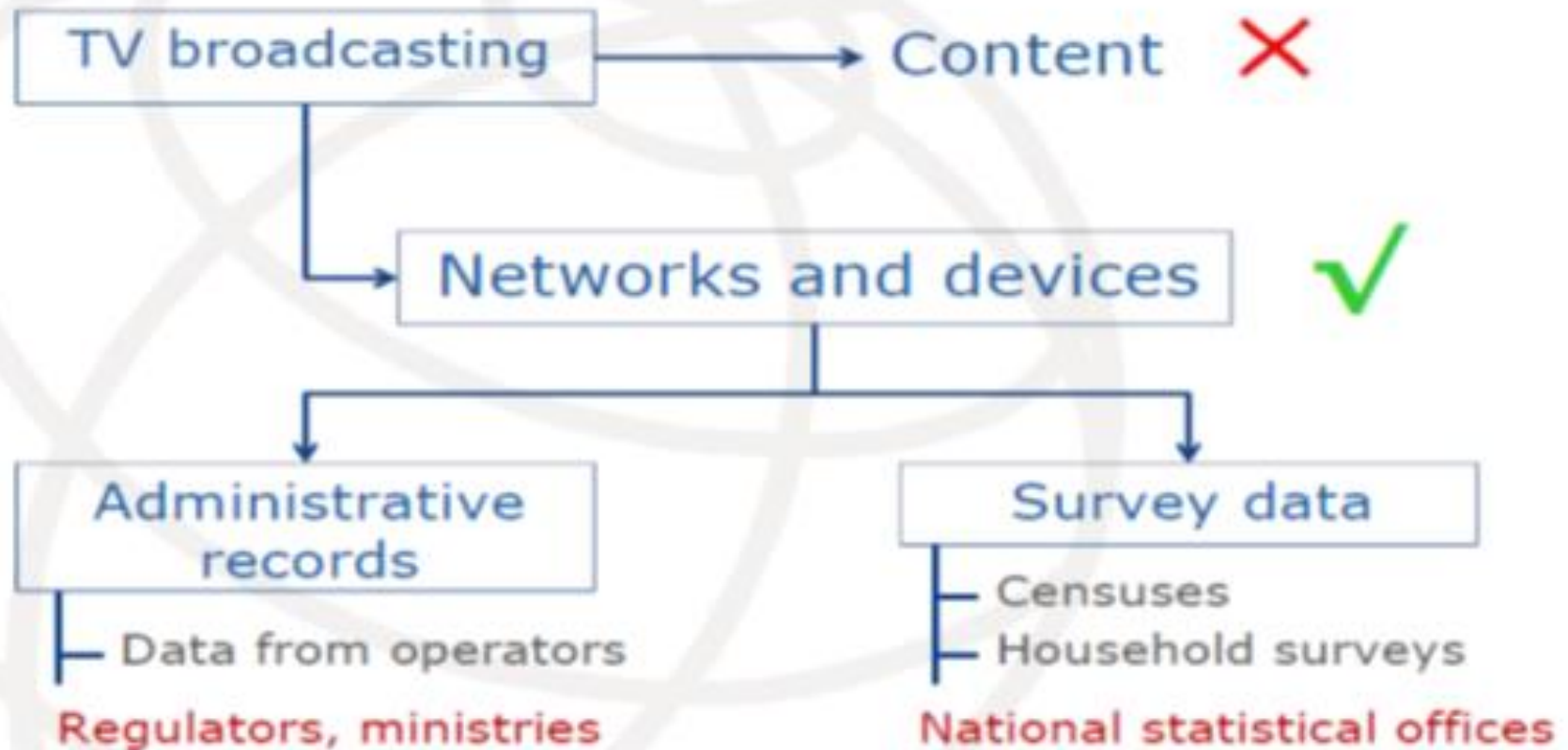


Example calculation of FTE

- Full time and part time staff at a service provider works 24,960 hours in a given year. There are 2,080 working hours in that year.
- $FTE = 24,960 \div 2,080$ the result is 12 FTEs.
- ILO recommends recording total hours actually worked as the preferred measure of labour input; the use of full-time equivalents is likely to be gradually phased out.

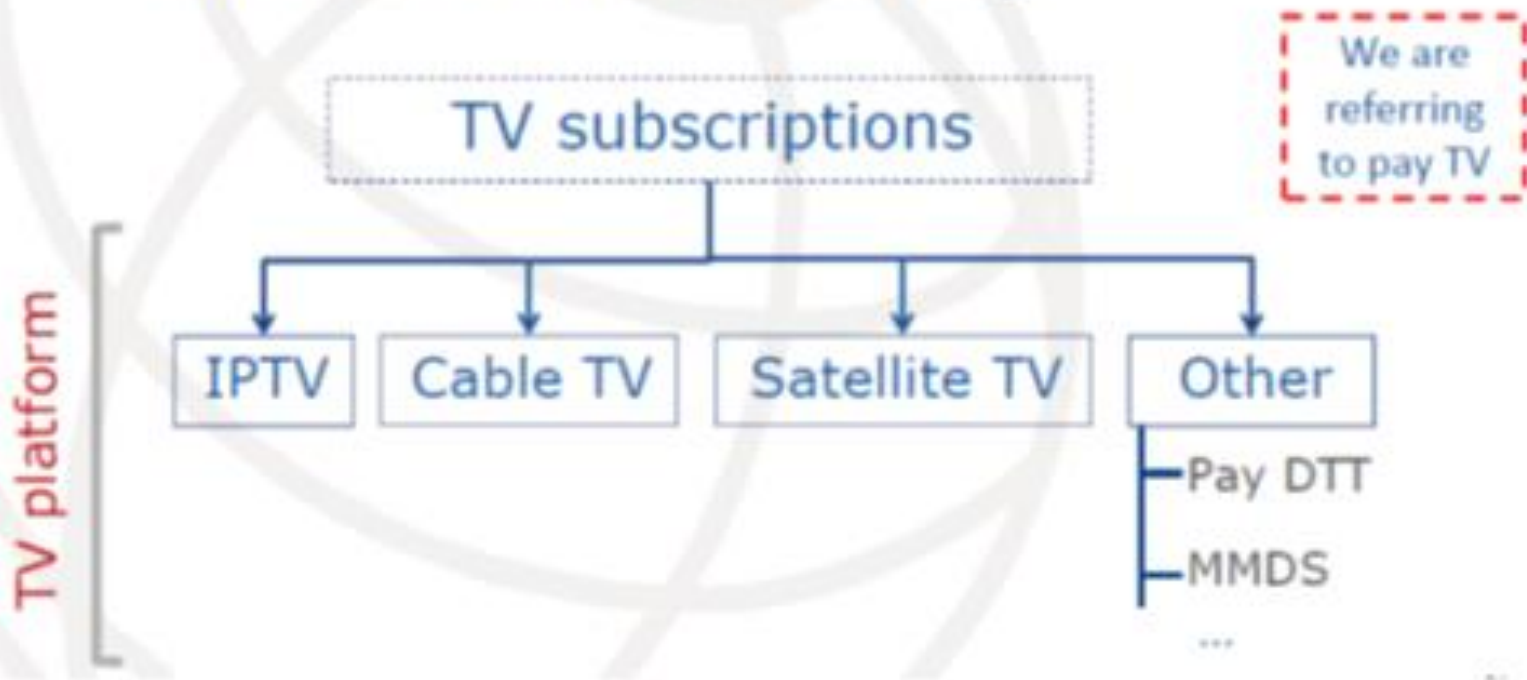
Broadcasting

ITU data on TV broadcasting



TV broadcasting

- EGTI proposed changes to administrative indicators on TV broadcasting:





IPTV subscriptions

- *IPTV subscriptions* refers to the number of subscriptions to Internet protocol television (IPTV), i.e. TV delivered over an IP-based network managed to support the required level of quality of service, quality of experience, security, interactivity and reliability.
- This does not include video accessed over the public Internet – for example, by streaming – and subscriptions to over-the-top audiovisual content providers.



Cable-TV

- *Cable-TV subscriptions* refers to multichannel TV programming delivered over coaxial cable networks. It includes both
- analogue and digital cable-TV subscriptions. If the breakdown of analogue/digital cable-TV subscriptions is available,
- data for each type of cable-TV subscriptions should be specified in a note. It excludes IPTV delivered over cable-TV
- networks.



Satellite TV subscriptions

- *Satellite-TV subscriptions* refers to the number of pay direct-to-home (DTH) satellite subscriptions, i.e. pay TV received via a satellite dish capable of receiving satellite television broadcasts.
- Does not include free-to-air satellite TV.



Other TV subscriptions

- *Other TV subscriptions* refers to pay-TV subscriptions other than IPTV, satellite TV and cable TV. This includes subscriptions to TV platforms such as microwave multipoint distribution systems (MMDS) and pay digital terrestrial television (pay DTT).
- Free-to-air TV should not be included. The TV platforms corresponding to the data reported should be indicated in a note.

Thank you



For more information
<http://www.itu.int/ict>
and
indicators@itu.int