



Finnish Communications
Regulatory Authority

FICORA market review 3/2011

Half-year report of the communications market

2011



© FICORA 2011
Inquiries: markkinaselvitykset@ficora.fi
FICORA should be referred to as the source of information.

Table of contents

Introduction	4
Telecom operators' revenues and investments	5
Revenues in the telecom sector	5
Investments in the telecom sector	6
Telecom operators' investment monitoring.....	7
Data transmission services	12
Fixed-line broadband services	12
Mobile data transmission services	13
Pricing and quality of customer service.....	16
Voice services	18
Mobile services.....	18
Fixed-line telephone network services	20
Pricing and quality of customer service.....	20
Media services.....	22
Provision of television services on the internet.....	22
IPTV services.....	22
Net TV services.....	23
Reception of television broadcasts	24
Postal services	26
Key economic figures of postal operations.....	26
Volume of postal items	28
Time of letter delivery	29
The number of service points	29

Introduction

The range of communications services available for companies and consumers, in particular, is increasingly wider. The new services either respond to the current demand or create new needs and opportunities. For example, watching a news broadcast via the internet on a portable computer is an alternative for traditional ways of watching television. In addition, it creates an opportunity for the emergence of new services meeting a range of needs. The new services help users to better find the services that meet their needs, but it will also be more complicated to compare and assess services. This challenge not only concerns users, but also the Finnish Communications Regulatory Authority (FICORA) and other parties who wish to follow the development of services and markets.

Every communications service user acquires communications services to meet personal needs and consumes them accordingly. Despite this, it is important for FICORA and other parties following the markets to be able to grasp an overall picture of the market. Simplification does not apply to everything, but a sense of commensurability and understanding about the mutual relationships between ser-

vices is required in order to be able to follow the market development more intensively.

When FICORA follows the markets, it aims at finding such entities and measures that enable the measurement of changes. All things cannot always be measured unambiguously. Finding the best possible definition often depends on the need for information in question. For example, the data on mobile broadband volumes and investment behaviour varies depending on the publisher. This is particularly important to recognise when carrying out international comparisons.

To ensure that the market information presented can be interpreted as unambiguously as possible, this market review offers a detailed depiction of, for example, the provision of mobile data transmission services as well as television services in Finland. The outline of this half-year report follows the previous autumnal reviews and presents the market information from the first half of 2011 and the key economic figures from the year before. The information on postal services concerns the entire last year. In addition, the review looks into the use of television services.

13 %

Telecom operators' investment rate p. 6

2,979,000

Number of pay-monthly mobile data transmission subscriptions p. 13

1,130,000,000 €

Turnover of inland postal items 2010 p. 26

3:11

Duration of an average mobile call p. 18

44 %

Adoption of high-definition displays in TV households p. 25

Telecom operators' revenues and investments

In Finland, there are tens of companies providing telecom services which differ from one another significantly when it comes to the extent of their operations as well as investment capability and need. This chapter explores the revenues and investments of the entire telecom sector as well as those of individual companies in the same sector. The investment information on the entire telecom sector is based on the information FICORA has collected from telecom operators. The company-specific examination of the investments of the sector's largest companies is, however, based on the final accounts analyses by Balance Consulting Oy.

Revenues in the telecom sector

The combined turnover of telecom operators with activities in Finland was approximately 4.8 billion in 2010. Less than EUR 3.8 billion of the turnover, or slightly less than 80 per cent, consists of the turnover from the fixed-line telecom network and mobile network. The remaining part of the turnover comes from TV and radio operations and other activities such as device sales. Compared to 2009, the combined turnover of telecom operators grew by 2 per cent. The turnover of the fixed-line telecom network dropped by 4 per cent whereas that of the mobile network grew by 2 per cent. The biggest change took place in the turnover of other activities than telecom networks with a growth of 12 per cent.

Telecom services can be divided into retail and wholesale services. Examples of retail services are telecom services sold to consumers, companies and organisations. Wholesale services are services that telecom operators sell to each other and which are further used for the provision of other telecom services. Examples of significant wholesale items are network leasing and interconnection fees.

More than a three quarters of the telecom network turnover, or 2.9 billion, comes from retail services. Of this, slightly less than half accumulated from the fixed-line telecom network and slightly more than half from the mobile network. Data transmission services accounted for a third of the retail service turnover. The data transmission services in the fixed-line network accounted for half the retail turnover whereas their share of the mobile network was only about one sixth. Services sold to residential customers accounted for more than half of the retail service turnover. The majority of the revenues from residential customers consisted of mobile network services whereas the majority of the revenues from non-residential customers came from fixed-line services.

Slightly less than a fourth of all telecom network revenues totalling EUR 900 million came from wholesale services. Two-thirds of this accrued from wholesale mobile services and the rest from wholesale fixed-line telecom services.

Turnover (EUR mil.)	2009	2010
Telecom operators' combined turnover	4 730	4 820
Revenue from fixed telecom network	1 690	1 620
Revenue from retail services	1 410	1 350
Revenue from wholesale services	280	270
Revenue from mobile network	2 100	2 150
Revenue from retail services	1 500	1 520
Revenue from wholesale services	600	630
Revenue from other operations ¹	940	1 050
Revenue from TV and radio operations ²	-	210
Revenue from other operations ³	-	840

¹ For 2009, further classification is available only for telecom network activities.

² Includes income from e.g. AV content services, IPTV fees, cable TV fees and TV and radio broadcasting services.

³ Includes income from e.g. device sales.

Source: Information from telecom operators collected by FICORA.

Table 1. Turnover of companies in the telecom sector in 2010.

Investments in the telecom sector

The nature of telecommunications is very investment-intensive, and developing and renewing business operations through investments play an important role in the telecom sector. From the viewpoint of the society, investments ensure the existence of competitive telecom services. Therefore, it is relevant to analyse the investments in the sector in order to be able to form an overall picture of the development in the sector.

In 2010, the gross amount of investments, tangible and intangible, amounted to EUR 630 million in 2010. Of this, EUR 540 million were investments on telecom networks. The total share of investments of the total turnover, or the investment rate in the telecom sector, was 13 per cent.

The sector's investments in euros grew by EUR 50 million compared to the year before. Telecom network investments grew by EUR 160 million. The share of other investments than those of telecom networks decreased considerably. Nearly two-thirds of telecom network investments were directed to the fixed-line telecom network.

The majority of telecom network investments were tangible investments. The ratio of tangible and intangible investments is hardly dependent on whether the investment target is the fixed-line network or mobile network.

Compared to the previous year, revenues from the fixed-line telecom network fell, but the investments on the fixed-line telecom network grew. Both the revenues and investments on the mobile network grew. On the other hand, other revenues than those on telecom network operations grew, but other than telecom network investments dropped.

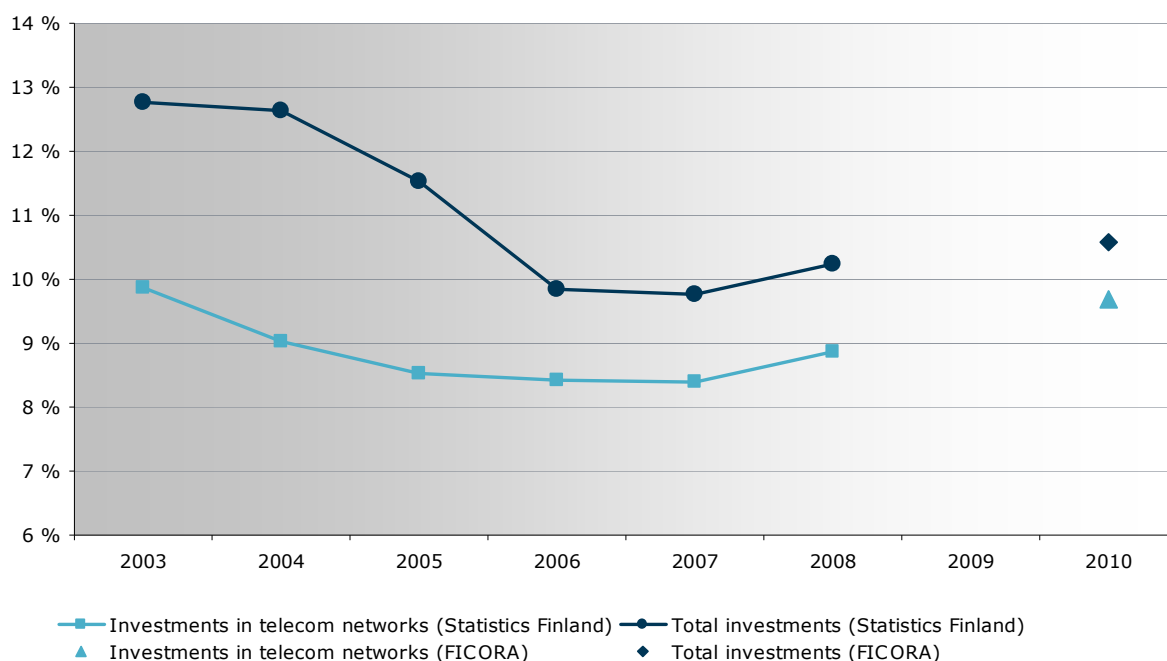
Investments (EUR mil.)	2009	2010
Gross amount of tangible and intangible investments	580	630
Investments in telecom networks	380	540
Investments in fixed telecom network	230	340
of which the share of tangible investments	-	290
Investments in mobile network	150	200
of which the share of tangible investments	-	170
Other investments	200	90

Source: Information from telecom operators collected by FICORA.

Table 2. The gross amount of tangible and intangible investments in the telecom sector.

In the telecom sector, investments are made on a long-term basis, and they are implemented in cycles of more than one year. Therefore, it is important that the investment development of the sector be assessed in the long run. The investment data presented in the telecommunications statistics of Statistics Finland provide the best comparative basis for the investment data

presented above. This statistics includes tangible investments only, and provides information only up to 2008. There is no division into tangible and intangible investments available for the telecom sector in 2009. The data for 2010 is based on the above-mentioned information collected by FICORA.



The graph for 2003-2008 is based on the telecommunications statistics of Statistics Finland, and for 2010, on the information FICORA has collected from telecom operators.

Figure 1. Telecom sector's tangible investments compared to total turnover.

The ratio of all tangible investments of the total turnover dropped rather steeply from 13 per cent in 2003-2004 to less than 10 per cent in 2006-2007. Since 2007, the ratio has started to rise again. The drop in tangible telecom network investments from slightly less than 10 per cent to more than 8 per cent took place quickly. On the other hand, by 2010, the ratio had almost risen to the same level as it was in 2003. In the long run, the share of telecom network investments of all investments made by telecom operators has risen considerably.

Telecom operators' investment monitoring

Above, the revenues and investments in the telecom sector were examined as a whole. In addition to carrying out an overall examination of the sector, FICORA follows the investments of the largest telecom operators based on their financial data. The final accounts help in making comparisons between operators and analyse operators in relation to groups of companies such as sectors or all companies. There has been monitoring since 2007 on the basis of final accounts restated by Balance Consulting Oy. The purpose of restating balance sheets is to be able to compare the balance sheets of different

operators or accounting periods by eliminating the effects of different accounting bases.

The median of the investment rates of Finnish telecom operators was approximately 7 per cent in 2008-2010. It has been decreasing through the 2000's, but was again on the rise in 2010. Since 2007, the lower quartile has been down to zero. In other words, there is a large amount of companies in the sector that do not invest at all.

Although the median of the investment rate of the companies in the telecom sector has dropped in the 2000's, it is still relatively high. The median of the investment rate of all Finnish companies has fluctuated from less than 1 per cent to two per cent in the 2000's. The median of the investment rate for companies in the telecom sector has been in the upper quartile of investment rates of all companies.

There are sectors that invest even more than the telecom sector. For example, the electricity, gas, steam and hot water supply and air conditioning sector is comparable with the telecom sector due to its network-like nature. The investment rate median of the first-mentioned sector was double fold in 2008-2010 compared to the telecom sector.

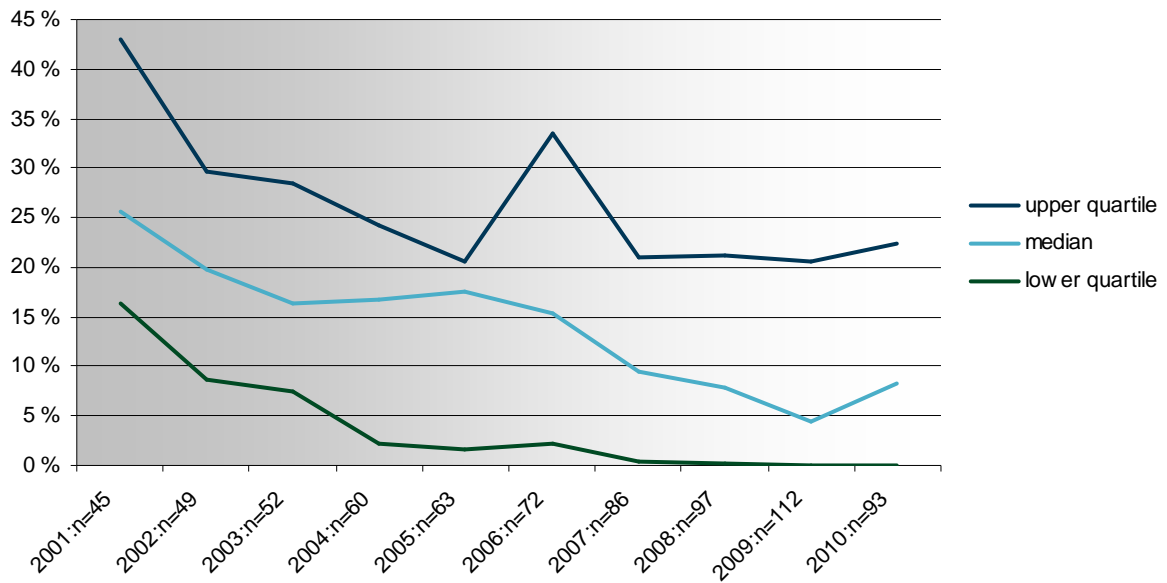


Figure 2. The quartiles of the investment rates of operators in the telecom sector in the 2000's.
Source: Balance Consulting.

A few relatively large companies as well as a large group of small companies operate in the telecom sector in Finland. The 2010 investment analysis has ten of the largest operators measured by the size of their turnover in telecommunications. The combined turnover of these operators covers more than 90 per cent of the total telecommunications turnover in the telecom sector in Finland. The analysis of the selected operators therefore gives a comprehensive picture of the overall investment behaviour in the sector.

Operators in the order of total turnover (largest first): TeliaSonera Finland Oy (TSF), Elisa Corporation (Elisa), DNA Group (DNA), Anvia Group (Anvia), TDC Oy Finland (TDC), Digita Oy (Digita), Osuuskunta PPO Group (PPO), AinaCom Oy (Aina), SSP Yhtiöt Group (SSP) and Kymen Puhelin Group (KYMP). Sanoma Television Oy was still on the list in 2009. The cable television operator Welho, previously owned by Sanoma Television Oy, is now part of the DNA Group. The change took place in 2010.

Final accounts information 2010 ¹	Turnover (M€)	Growth of turnover (%), average of 3 years	Investments rate (%), average of 3 years	Equity ratio (%)	Return on investment (%)	Possibilities to sustain investments ⁴
TSF	1577,7	-1,3	12,2	93,8	5,2	26,9
Elisa	1463,2	-2,2	12,3	42,5	16,9	2,0
DNA	690,5	9,0	13,9	63,6	10,3	7,0
Anvia	108,6	9,2	17,4	50,4	17,9	6,7
TDC	91,8	3,2	11,3	72,7	8,4	13,1
Digita	89,6	-4,4	19,7	82,2	18,4	12,1
PPO	71,3	51,6	36,5	74,2	4,0	3,9
Aina	67,7	-6,2	8,6	13,8	-8,7	-1,9
SSP	48,5	20,3	35,5	76,7	-0,8	6,5
KYMP	40,1	4,2	25,2	71,3	2,7	6,1
Telecom sector²	2,9	3,2	6,9	61,1	10,1	-
Sector in comparison³	12,6	10,5	13,2	37,4	8,3	-

¹ Final accounts date from 31 December 2010, except for Digita's final accounts of 31 March 2010

² Statistics of the medians of the branch "61: Telecommunications" (Standard industrial classification 2008).

³ Statistics of the medians of branch "35: Electricity, gas, steam and hot water supply and air conditioning" (Standard industrial classification 2008).

⁴ Classification of the possibilities to sustain investments: under 0.5, very difficult, 0.5 - 1 difficult, 1 - 1.5 satisfactory, 1.5 - 2 good and over 2 very good. The meter has been developed together with Balance Consulting Oy for the needs of FICORA's investment monitoring.

Table 3. Selected final accounts values of the largest telecom operators in 2010. Source: Balance Consulting.

The difference between the analysed operators is notable. The second largest operator's turnover is larger than that of the combined turnover of the eight smallest operators. During the past three years, the growth of turnover has been considerable for a group of operators whereas it has been negative for others. All operators invest a relatively large amount of their turnover, but there are big differences in the investments rates. When profitability is measured by return on investment, significant differences emerge: the profitability of certain operators is very good, that of others is weak. Instead, the solvency ratio, which is used for assessing the company's solidity and loss absorbercy, is very good for nearly all companies analysed. It is typical for telecom operators to have a high solvency ratio.

There is a positive correlation between the growth of turnover and investment rate among the analysed operators. Operators whose turnover growth was the strongest also made the highest investments. The correlation between the scale of activities and investment rate is not equally clear, but the highest investment rates are found among the smallest companies.

The investment rate of the telecom sector is high. The investment rates of the analysed companies are high in comparison with the telecom sector. All the analysed companies were above the sector median when measured by the average of investment rate from three years. In conclusion, telecom operators invest widely, and the largest companies in the sector are also the biggest investors in relation to turnover.

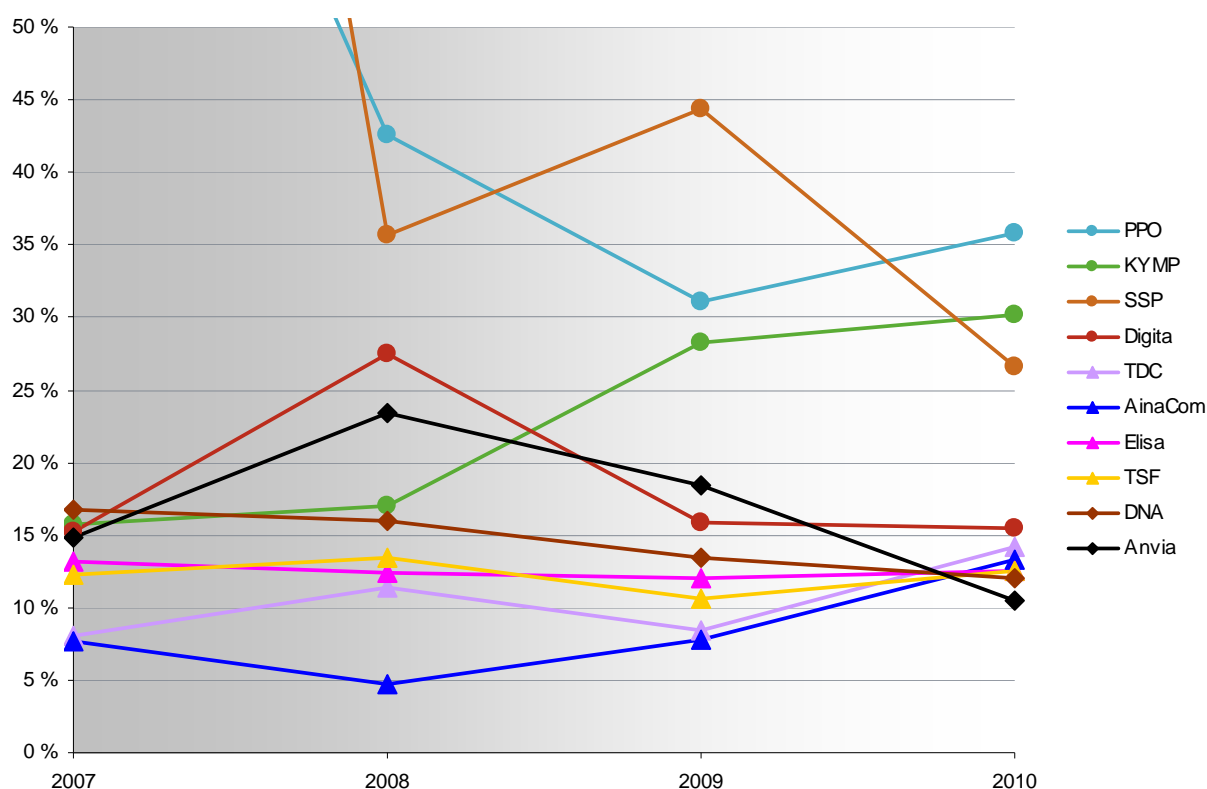


Figure 3. The investment rates of the analysed telecom operators 2007-2010. Source: Balance Consulting.

The analysis of the 2010 investment rate highlights two definite groups: companies investing 10 to 15 per cent of their turnover and those investing more than 25 per cent of their turnover. PPO, SSP and KYMP belong to the latter group. The investment rates of PPO and SSP have long been among the highest ones. In 2007, the investment rate of SSP was more than 150, and PPO's 90 per cent. KYMP, on the other hand, has increased its investment rate during the past years. On the basis of the 2010 annual reports, the key investment targets of these large investors (in relation to their operations) were fibre-optic networks and the renewal and development of service production. The investment rates of the other operators have continued to approach ones another in 2010.

The financial data helps to make estimates of the operators' possibilities to sustain investments. For this purpose, the sum of money¹ depicting the operator's cash flow financing and ability to incur more debts was calculated. In this, the shareholders' estimated return on in-

vestment was taken into consideration. The relation of the sum of money and the average of investments made in the past three years in euros leads to an estimate of the operator's financial opportunities to maintain the realised investment level. A ratio exceeding the value 2 is an indication of good sustenance possibilities. Then, the sum of money at the operator's hands is at least double in relation to the average of realized investments. The meter for evaluating the possibilities to sustain investments has been developed together with Balance Consulting for the needs of FICORA's investment monitoring.

The ratio of the possibilities to sustain investments and the investments made has been depicted in figure 4. The operator's position on the vertical axis of the figure depicts the operator's possibilities to sustain investments, which are very good except in the case of one operator. The position on the horizontal axis describes how large the investments made are on the average, compared to the operator's turnover, and the area of the circle describing the operator corresponds to turnover. In relation to their turnover, operators with the largest turnover are among those operators who make the smallest investments. On the other hand, the highest investment rates are found among operators with the lowest turnover.

¹ Sum of money = income before extraordinary items + shareholder's equity - net liabilities with interest - calculatory yield unit of owners (10% of shareholder's equity)

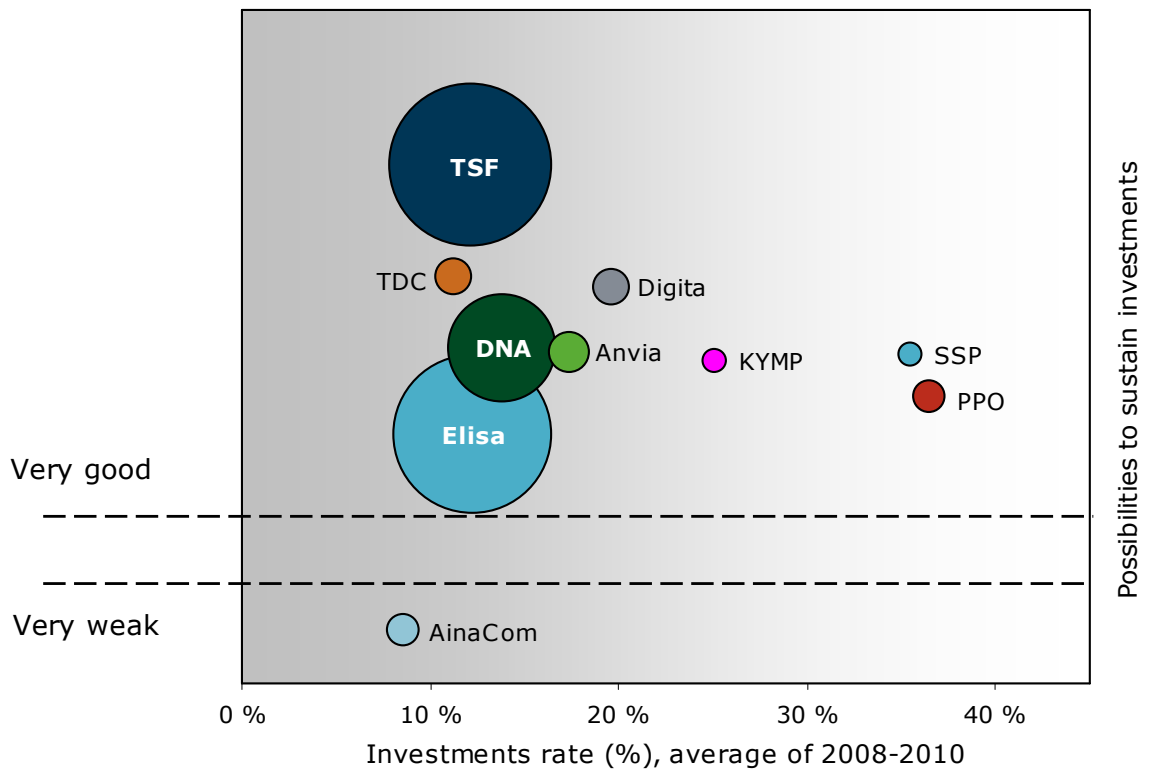


Figure 4. Investments made by telecom operators and opportunities to sustain investments.

Nearly all the operators analysed have very good financial possibilities to sustain their investments or even increase them if necessary. This also applies to operators that have made large investments in relation to turnover. In addition to financial possibilities, a number of factors related to the operator's strategy and operational environment affect investment de-

isions. And, the operator must have a strong view of the new investments being profitable for it, before they are made. Because financial possibilities have not been the key factor restricting investments, it can be stated that the investments made also correspond the prior investment needs of these companies.

Data transmission services

In late June 2011 in Finland, there were a total of 4.5 million pay-monthly internet subscriptions providing users with a broadband connection. The figure includes fixed-line broadband and mobile subscriptions for whose data transmis-

sion services the subscribers pay monthly. In addition to these, in Finland, there were more than 1.2 million mobile subscriptions for which users using data transmission services were charged on other grounds, for example usage.

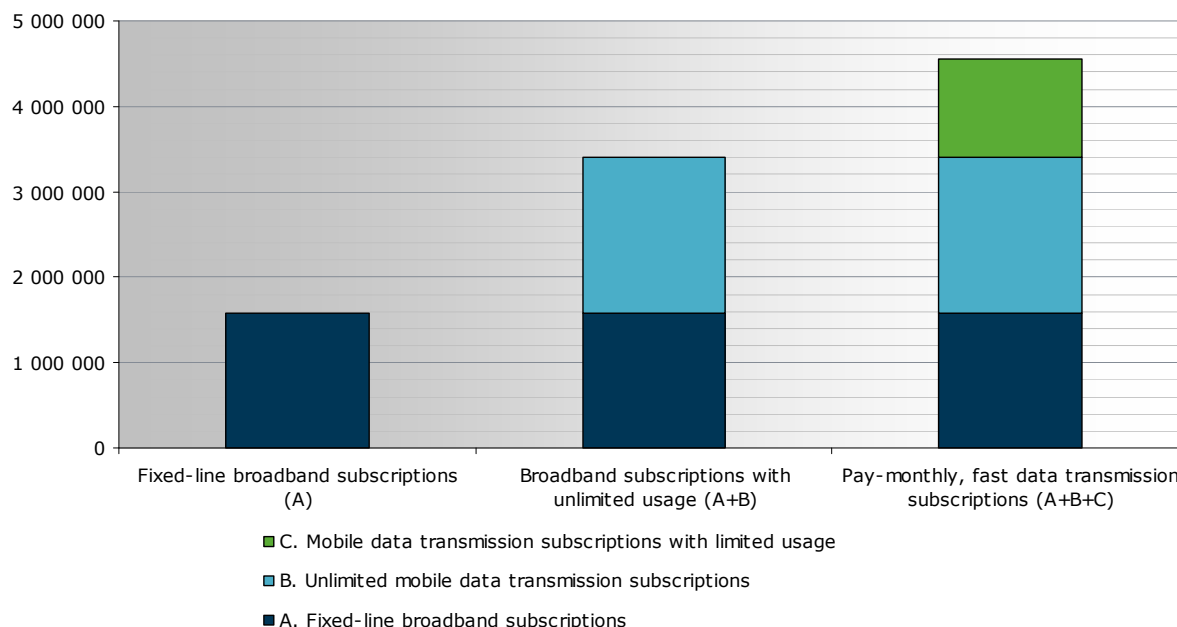


Figure 5. Pay-monthly data transmission subscriptions 30 June 2011.

Fixed-line broadband services

The number of fixed-line network or fixed-line broadband subscriptions has not undergone any major changes in the past years, their number remaining at less than 1.6 million. The moderate growth in subscriptions that begun in late 2010, continued into the first half-year of 2011, increasing the number of fixed-line broadband connections by 12,000. Three fourths of the subscriptions were used by residential customers.

DSL technology is the most common fixed-line broadband technology. Of all fixed-line broadband subscriptions, approximately 71 per cent had been implemented by means of DSL technology, and about 16 per cent by means of cable modem technology. About 9 per cent of fixed-line broadband subscriptions were real estate and housing company subscriptions. The majority of these or 123,300 subscriptions had been implemented by Ethernet technology.

Year	2008		2009		2010		2011
Date	31.12.	30.6.	31.12.	30.6.	31.12.	30.6.	30.6.
Broadband subscriptions	1 616 900	1 579 600	1 565 600	1 555 100	1 559 400	1 571 500	
DSL	1 231 300	1 216 300	1 185 900	1 162 600	1 112 700	1 115 900	
Cable modem	214 800	215 500	222 700	229 600	240 600	255 500	
Real estate and housing company subscription	134 900	104 700	106 600	117 500	158 000	139 400	
FTTH			12 600	14 500	20 300	38 700	
Wireless (fixed) broadband*	26 100	31 600	31 800	30 100	26 700	21 100	
Other	9 800	11 500	6 000	800	1 100	900	

*broadband subscription offered to a fixed location (Flash-OFDM, WiMAX ja Wlan)

Table 4. The development of fixed-line broadband subscriptions by technology.

The fixed-line broadband subscription speeds continued to increase. Especially, the share of connections of 1 Mbit/s or slower dropped significantly whereas the share of connections of 10 Mbit/s or faster grew. Almost 66 per cent of the connections had a download speed of 4 Mbit/s or faster. In late 2010, the corresponding

figure had been about 60 per cent. The share of broadband connections of 10 Mbit/s or more was 41 per cent, which is 8 percentage units more than at the end of 2010. The share of connections of 100 Mbit/s or more grew by one percentage unit to five per cent.

Year	2008	2009		2010		2011
Date	31.12.	30.6.	31.12.	30.6.	31.12.	30.6.
Less than 2Mbit/s	40 %	43 %	39 %	30 %	24 %	17 %
2Mbit/s - less than 4Mbit/s	50 %	47 %	26 %	22 %	17 %	17 %
4Mbit/s - less than 10Mbit/s			19 %	25 %	26 %	25 %
10Mbit/s or more, but less than 25Mbit/s	9 %	9 %	14 %	19 %	26 %	33 %
25Mbit/s - less than 100Mbit/s			< 1 %	1 %	3 %	3 %
100Mbit/s or more	1 %	1 %	2 %	3 %	4 %	5 %

Table 5. Fixed-line broadband connections by speed category.

At the end of June 2011, TeliaSonera and Elisa, with market shares of 30 per cent, were the largest telecom operators providing fixed-line broadband services, based on volumes. DNA's market share was about 19 per cent, and the combined market share of Finnet Group companies 16 per cent. Other telecom operators accounted for about 5 per cent.

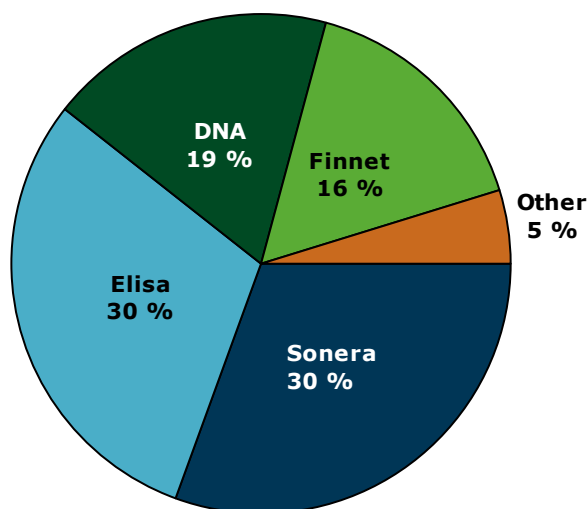


Figure 6. Market shares of fixed-line broadband connections

Mobile data transmission services

At the end of June 2011, there were 4.2 million mobile subscriptions that were used for data transmission or at least the user had paid for

data transmission services. This group comprises many sorts of subscriptions which all differ from one another. Especially their pricing model is divergent. The subscription fees of certain subscriptions are based on usage whereas others are based on a fixed monthly fee in the same way as that of fixed-line broadband connections, when usage does not affect the costs.

Various restrictions on data transmission volumes have become more common in pay-monthly subscriptions. Certain operators' subscription contracts include a data volume limit per month. If the limit is exceeded, the operator can restrict the speed of the subscription or charge an additional fee. The data transmission limit also affects the monthly fee in the same way as does the maximum speed of the connection.

In the first half-year of 2011, the number of pay-monthly mobile subscriptions without data transmission limit grew by approximately 12 per cent to more than 1.8 million subscriptions. The number of mobile subscriptions with unrestricted data transmission was more than 1.1 million. In all, the number of pay-monthly mobile data transmission subscriptions was nearly 3 million pieces. In addition to these, more than 1.2 million mobile subscriptions without pay-monthly data transmission service were used for data transmission based on usage-based charging.

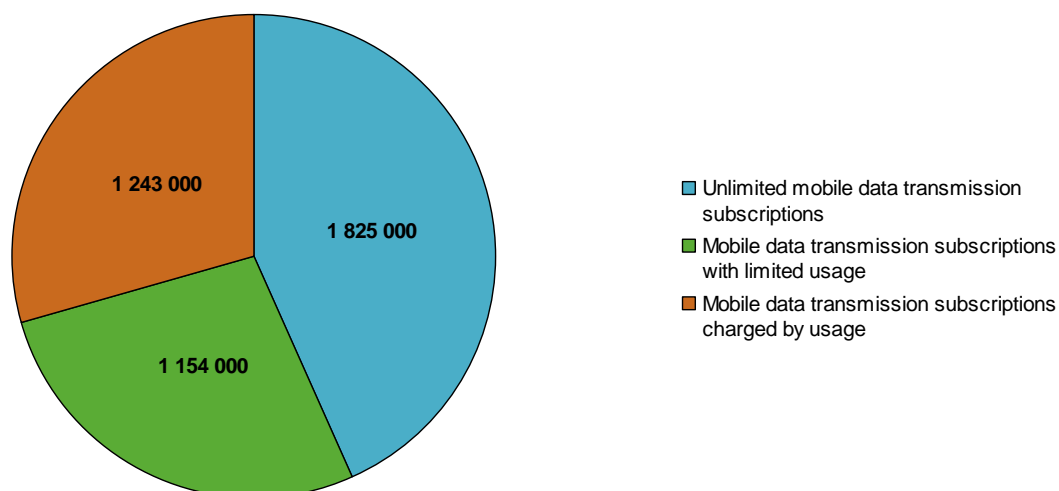


Figure 7. Subscriptions used for mobile data transmission.

Two-thirds of all pay-monthly mobile subscriptions were used by residential customers. Subscriptions without limits were more abundant among residential customers, whereas non-residential customers preferred subscriptions with limits. Only one out of four subscriptions used by households had restricted data transmission volume whereas two-thirds of corporate subscriptions were of this type.

The usage patterns and purposes of mobile data transmission services are more versatile than those of fixed-lines. There are two extreme purposes in consumer usage: on the one hand, a subscription can be used as a desktop modem, for example, and on the other hand, a mobile phone, for example, can be used as a car navigator. Usually there is nothing that prevents the use of the same subscription for both purposes. Mostly, the use of mobile subscriptions is not restricted to a certain terminal device. However, the use of mobile call services is prevented, with the exception of emergency calls, in some subscriptions sold for data transmission purposes. Such subscriptions are meant for data transmission only.

Contrary to fixed-line broadband subscriptions, the quality and pricing of mobile data transmission services are not dependent on the location

where they were bought or used. The quality of the service is mainly determined by the location and circumstances at that time.

The speeds of mobile data transmission services differ greatly according to how good the connection from the terminal device to the mobile network is and how many other users of mobile data transmission services there are in the base station area. Normally, service providers give a wide range for the speed level of the subscription in their offers and contract terms. For example, the average speed range of a 15 Mbit/s connection can be 0.4 to 6 Mbit/s. Especially, when the user is far from the base station, it can be difficult to establish a connection quickly and reliably without external antenna solutions.

The sold data transmission subscriptions are distinguished between those of 1 Mbit/s or slower and data transmission subscriptions mostly functioning at the maximum network speed. In June 2011, less than half of all pay-monthly mobile data transmission subscriptions had a nominal speed of less than 2 Mbit/s, whereas the nominal data transmission speed for the other near half was at least 10 Mbit/s. Less than one out of every ten subscriptions was left inbetween.

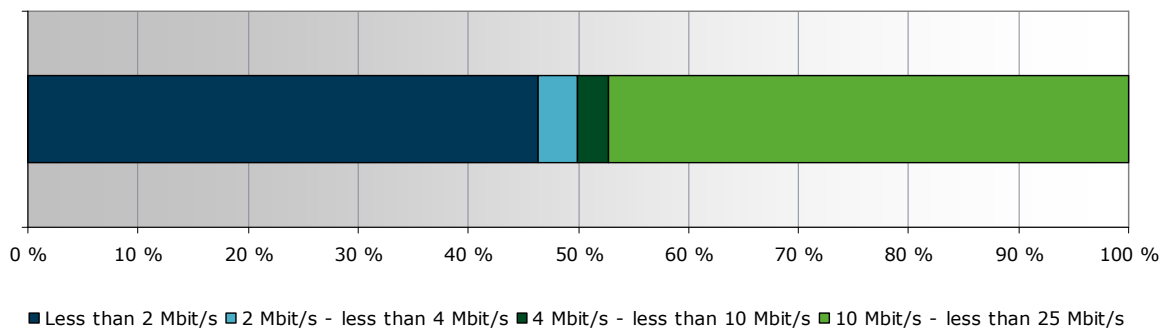


Figure 8. Speeds of pay-monthly mobile data transmission subscriptions.

Data volumes in mobile networks continued to increase. In the first half-year of 2011, the amount of information transferred in mobile

networks was approximately 27 million gigabytes, which was 31 per cent greater than in the preceding half-year.

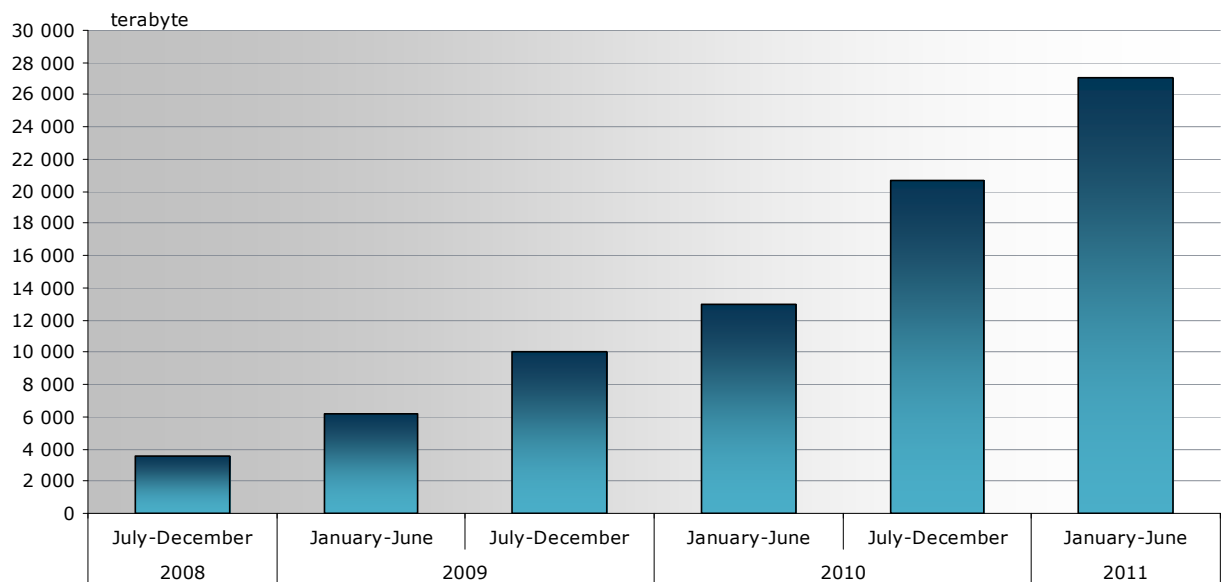


Figure 9. Development of transferred data volumes in mobile networks.

In Finland, there are three nationwide players, whose mobile networks enable the provision of mobile data transmission services: DNA Oy, Elisa Oyj and TeliaSonera Finland Oyj. In addition to these, Ålands Mobiltelefon Ab operates in the Province of Åland. Network operators either offer services via their own service operators or they lease their network to other service operators for usage.

Traditionally, mobile call and message services have been implemented by GSM technology. At first, the GSM network used the 900 MHz frequency range, but as the number of users grew, it shifted to the 1800 MHz frequency range. The GSM network also enables data transmission, but then the speed is of low standard according to current requirements. GSM networks have been replaced by and completed by third generation 3G mobile networks (UMTS/HSPA/HSPA+), which provide clearly

faster data transmission connections, even 42 Mbit/s, in theory. In densely-populated areas, 3G networks use the 2100 MHz frequency range whereas the 900 MHz frequency range gives the best coverage in scarcely-populated areas. The next development step are the 4G networks (LTE) operating in the 2600 MHz frequency range, which normally enable the transmission speeds of several tens of megabytes, or even more than a hundred megabytes in theory.

In Finland, the coverage of mobile networks is rather good. GSM and UMTS networks reach nearly 100 per cent of the population with the exception of certain scarcely-populated areas. In some regions, an external additional antenna, which is installed on the terminal device, may be necessary when call services are used. There is regional deviation among the operators' networks.

In all, the 3G networks reach as many as more than 95 per cent of Finns. In addition to large population centres, 3G networks cover the majority of smaller areas, and large areas of scarcely-populated regions. So far, the coverage of the next generation 4G networks is low. Initially, 4G services can only be used in a few of the largest cities in Finland.

Pricing and quality of customer service

The monthly prices of broadband subscriptions by speed category developed into opposite directions in the first half of the year. The sharpest fall in prices was seen in the speed category of 512 kbit/s mobile data transmission subscriptions. The reason for the price fall was that many service providers raised the speed levels

of the slowest mobile data transmission connections to 512kbit/s whereas the prices remained the same. Correspondingly, the prices of 100 Mbit/s broadband subscriptions and faster dropped clearly. There was gradual rise or no change at all in other speed categories.

In July 2011, the list price of a fixed-line broadband connection of 2 Mbit/s was approximately EUR 39 a month, which is the same as the year before. The list price of a mobile subscription of the same connection speed was considerably lower, approximately EUR 25 a month. The average prices have been calculated as an average by municipality. The true average prices paid for subscriptions are clearly lower than this, because there are many subscriptions in large residential centres and the prices are lower there than in smaller areas.

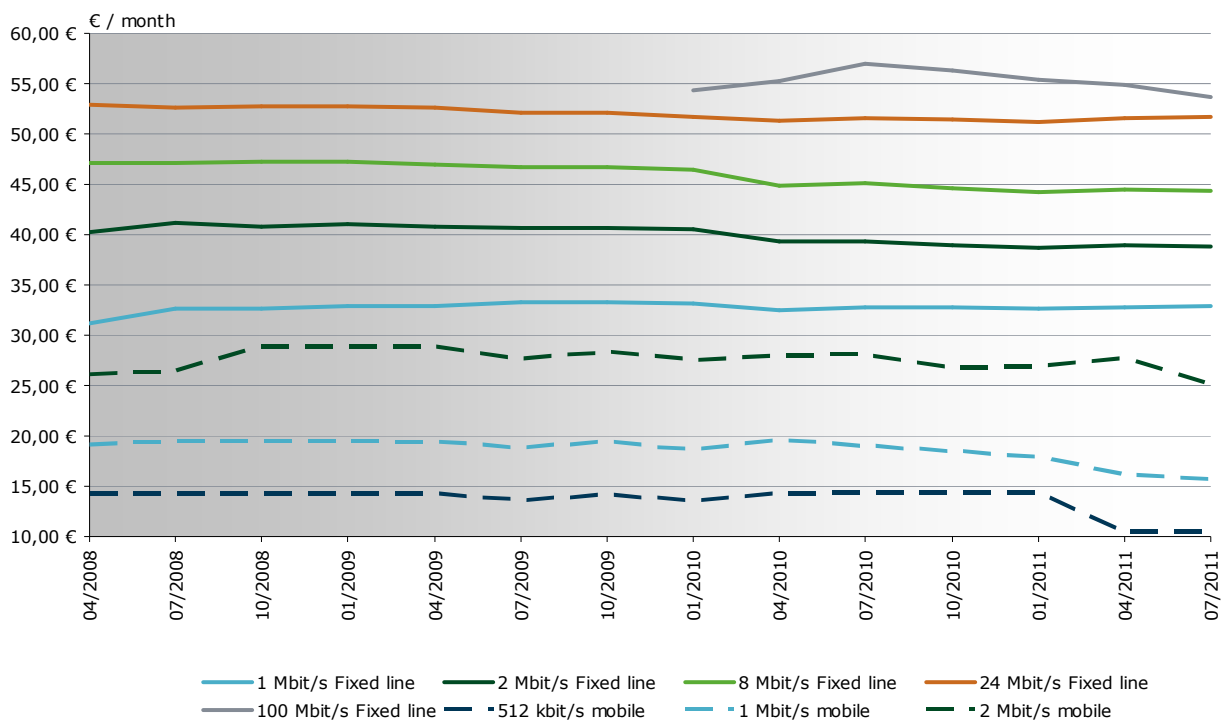


Figure 10. Price development of broadband subscriptions.

The marketing of broadband services still focuses on offer campaigns, which offer broadband subscriptions at a monthly price that is much lower than the list price. Broadband subscriptions sold as special offers are normally tied to fixed-term contracts as list pricing is basically based on contracts that are valid until further notice. The price comparison of fixed subscriptions takes only list prices into consideration whereas offers are taken into consideration when mobile subscriptions are compared.

that users acquire a pay-monthly data transmission service if they use their mobile phones for active data transmission, such as reading e-mail and browsing web pages. The speeds of mobile data transmission subscriptions have definitely risen. Many service providers do not provide subscriptions slower than 512 kbit/s. At the same time, the maximum speeds have risen due to the development of networks and terminal devices.

The prices of basic data transmission services connectible to mobile phones have declined due to tough price competition. Often, it is advisable

Mobile data transmission subscriptions are often marketed as fixed-term agreements and as tie-in subscriptions including a 3G modem. Therefore, the list prices do not necessarily corre-

spend to the prices paid by consumers. In 2010, an average of around EUR 10.90 per month was spent on a mobile data transmission subscription. The analysis of list prices reveals that the price spread is wide. At the lowest, mobile data transmission subscriptions are sold for a couple of euros whereas more than EUR 50 a month is charged for the fastest 4G connections.

erators remained for the most part below half a minute, in general, whereas larger telecom operators responded to customers in less than two minutes, on the average. The average response time of all telecom operators providing broadband services was approximately 40 seconds during the first two quarters. It should be noted that Welho and DNA merged during the second quarter.

During the first half-year, the average response times for customer service in small telecom op-

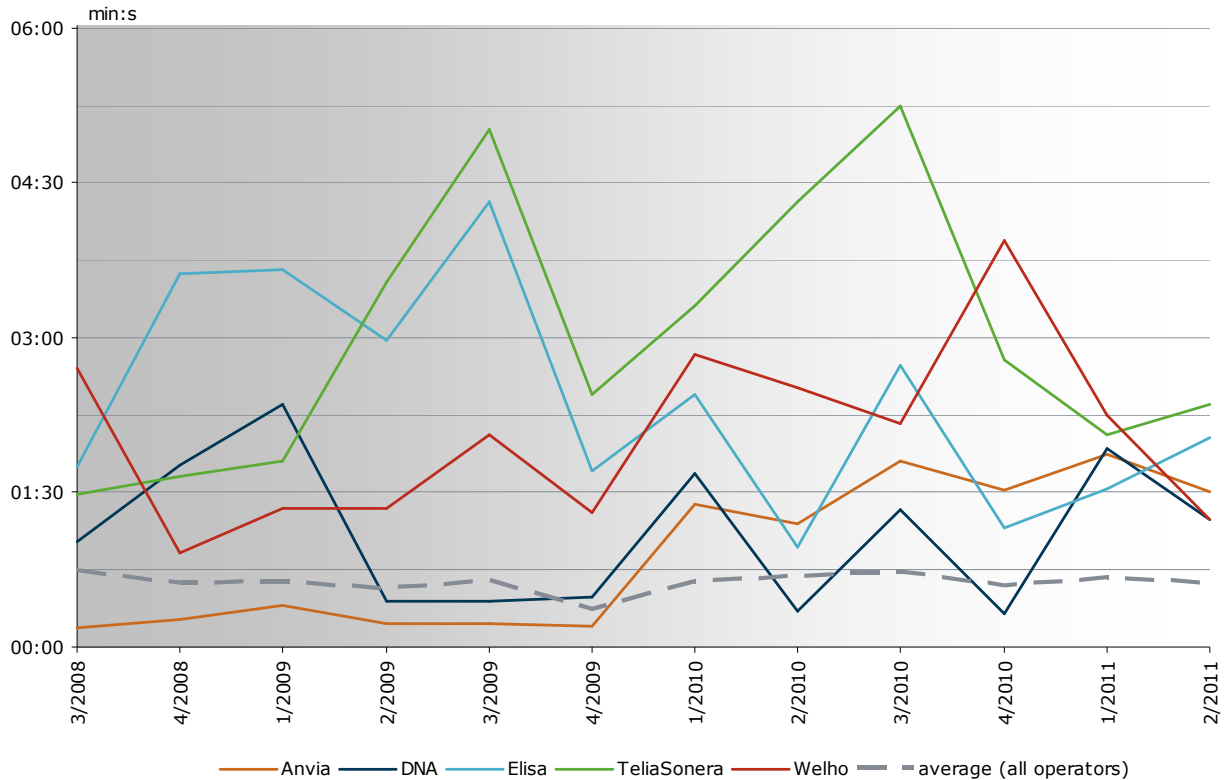


Figure 11. Response times of broadband operator customer services.

Voice services

In the first half of 2011, the mobile subscription volume grew by 5 per cent to 8.8 million. The fixed-line telephone subscription volume fell by 7 per cent to 1.1 million. The number of calls dropped in both networks, but the decrease was

stronger in the fixed network. The duration of an average phone call in the mobile network exceeded the duration of an average fixed-line call.

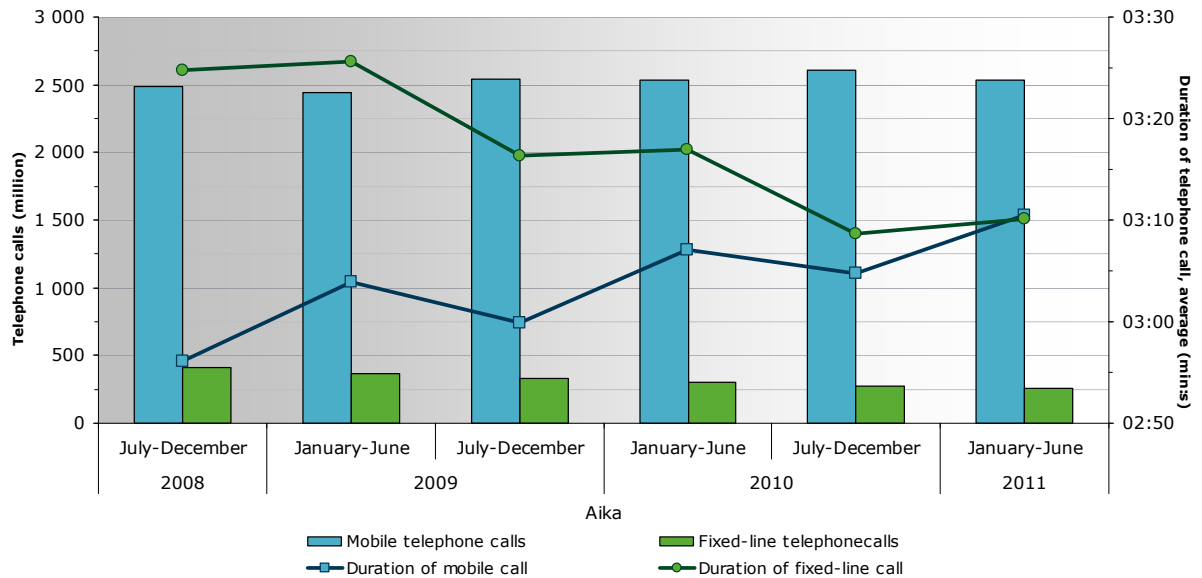


Figure 12. Call volumes 2008-2011.

Mobile services

During the first half-year of 2011, the number of mobile subscriptions grew by approximately five per cent or 390,000 subscriptions. As be-

fore, the growth was greatly accelerated by the popularity of subscriptions used for data transmission. At the end of June, there were 8.8 million mobile subscriptions in Finland. The majority of them, or 75 per cent, were used by residential customers.

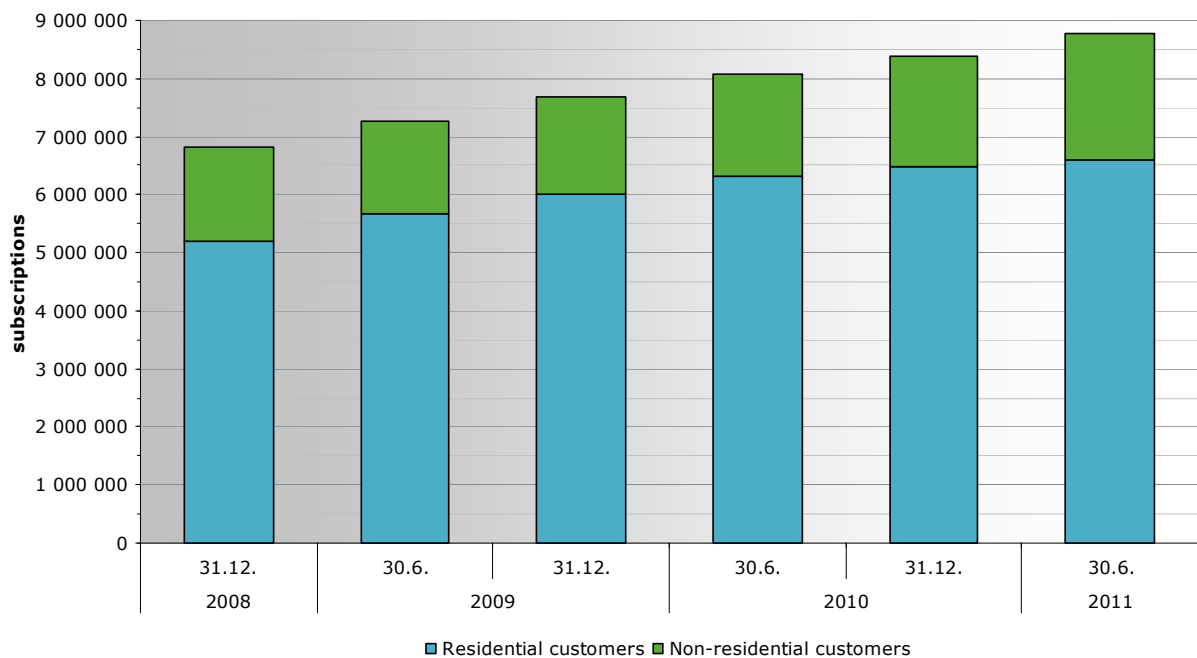


Figure 13. Volume of mobile subscriptions in 2008 - 2011.

The share of prepaid subscriptions of all mobile subscriptions remained at around 10 per cent. The number of valid tied-in subscription contracts totalled nearly 2 million. The number of tied-in subscriptions continued to grow. During the first half-year, their number grew by 16 per cent or around 270,000 subscriptions. The share of tied-in subscriptions over all mobile subscriptions was as much as 23 per cent.

Compared to the end of 2010, the market shares of mobile subscriptions have undergone little change, but the percentage shares swayed slightly in the same way as in the past years. Measured by the number of subscriptions, Elisa remained the market leader with a market share of 39 per cent. TeliaSonera's market share dropped by one percentage unit to 35 per cent, and DNA's, with the third largest market share, market share rose by one percentage unit to 24 per cent. The combined market share of other operators remained at two per cent.

According to the number portability statistics of Numpac Oy, approximately 300,000 numbers were ported during the first half-year of 2011, which grew by two per cent year-on-year. In relation to the total volume of subscriptions, the number of ported numbers per 100 subscriptions was 3.6, which corresponds to the first half-year of 2010.

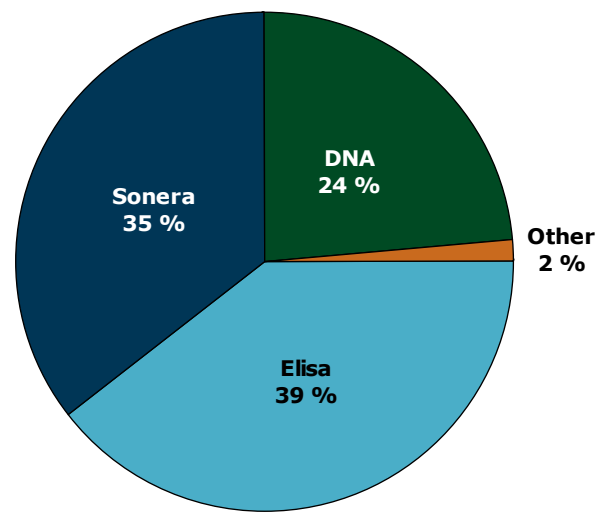


Figure 14. Market shares of mobile subscriptions.

The number of mobile calls made dropped by approximately 3 per cent compared to the preceding half-year. However, the number of call minutes remained at the same level, with growth staying below 1 per cent. Therefore, the duration of an average mobile call grew to three minutes and eleven seconds, whereas it was approximately six seconds shorter six months earlier.

Year	2008		2009		2010		2011
	July-December	January-June	July-December	January-June	July-December	January-June	January-June
Mobile subscriptions	6 830 000	7 280 000	7 700 000	8 070 000	8 390 000	8 780 000	8 780 000
Telephone calls (million)	2 490	2 439	2 547	2 533	2 603	2 533	2 533
Call minutes (million)	7 315	7 479	7 641	7 900	8 019	8 045	8 045
SMS (million)	1 818	1 845	1 955	1 930	2 073	2 158	2 158
MMS (million)	18	20	20	20	21	24	24

Table 6. Development of mobile subscriptions and calls and messages in 2008-2011.

During the first six months of 2011, almost 2.2 billion text messages were sent, which was about four per cent more than the previous half-year. The number of multimedia messages

sent grew considerably compared to the last half-year of 2010, approximately 16 per cent, to slightly less than 24 million pieces.

Fixed-line telephone network services

In the first half of 2011, the development of the fixed telephone network services continued its decline. The fixed-line telephone subscription

volume fell by 7 per cent to 1.1 million. The figure includes not only the traditional fixed-line subscriptions, but also the VoIP subscriptions subject to a fee telecom operators provide to residential and non-residential customers. The number of VoIP subscriptions underwent little change during the year.

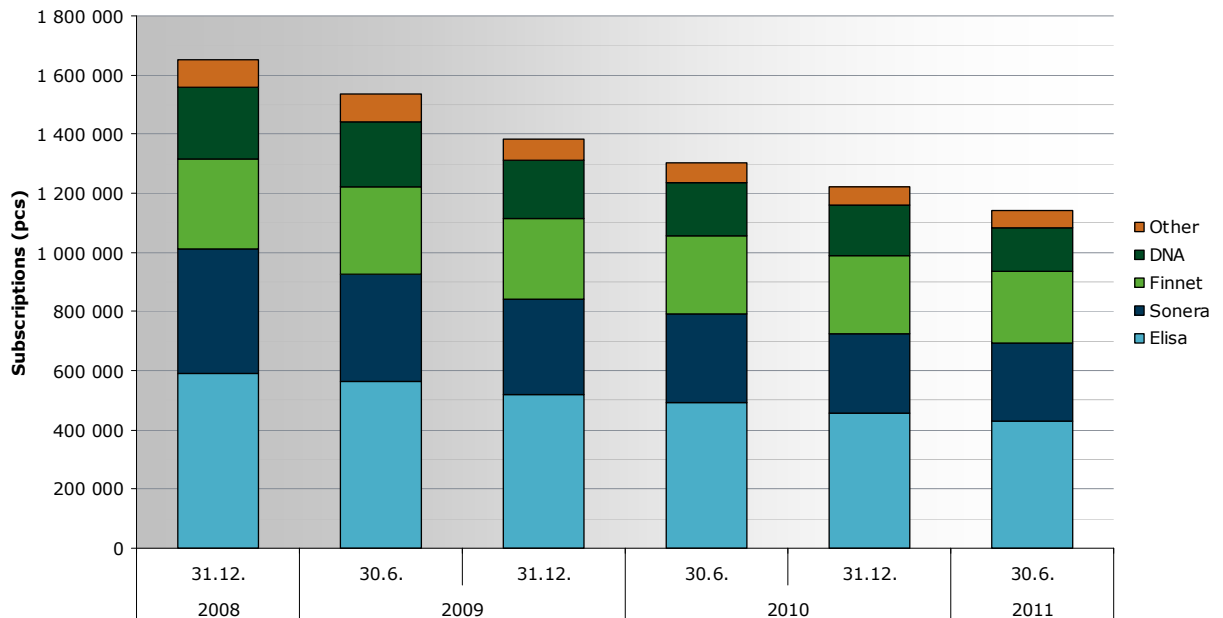


Figure 15. Fixed-line subscriptions by operator group in 2008 - 2011.

At the end of June 2011, based on subscription volumes, Elisa was the fixed-line market leader, holding a market share of 38 per cent. Teli-Sonera's market share was 23, Finnet Group's 21 and DNA's 13 per cent. There were no significant changes in the market shares. The market share of Elisa remained at the same level as in late 2010. The market shares of Teli-Sonera and Finnet Group grew by one percentage unit and that of DNA's dropped by one percentage unit. The combined market share of other inde-

pendent service operators dropped from six to five per cent.

Similar to previous half-years, the voice call minutes and volumes of the fixed-line telephone network have dropped more strongly than the subscription volume. Call minutes made from the fixed-line network and the number of calls made dropped by approximately eight per cent during the first half of 2011. However, the duration of an average call rose slightly to be three minutes and ten seconds.

Year	2008		2009		2010		2011
	July-December	January-June	July-December	January-June	July-December	January-June	January-June
Fixed-line connections	1 650 000	1 530 000	1 430 000	1 350 000	1 220 000	1 140 000	
Telephone calls (million)	409	363	329	304	276	253	
Call minutes (million)	1 396	1 244	1 077	998	868	802	

Table 7. Development of fixed-line telephone subscriptions and number of phone calls 2008 - 2011.

Pricing and quality of customer service

The prices of mobile calls and communications services are well-established. The price changes have mainly taken place in the form of different voice call and text message packages and other additional benefits. In addition, there are new

types of subscriptions available in the market. Their prices are less expensive than the other subscriptions of the operator concerned, but at the same time, the customer commits to receiving advertisements and other marketing messages to his telephone or e-mail.

There were minor changes to the customer service response times of telecom operators providing mobile services in early 2011 compared to the situation at the end of 2010. In the second quarter of 2011, the average response times for the customer services of DNA, Elisa, Saunalahti, Tele Finland and TeliaSonera was approximately 50 seconds worse than at the end of 2010. The average response time of

these operators was 2 minutes and 21 seconds during the second quarter of 2011. On the other hand, the average response time of AinaCom, Ålands Mobiltelefon, Dicame and Globetel dropped by 5 seconds compared to the end of 2010, the average response time being 16 seconds during the second quarter of 2011.

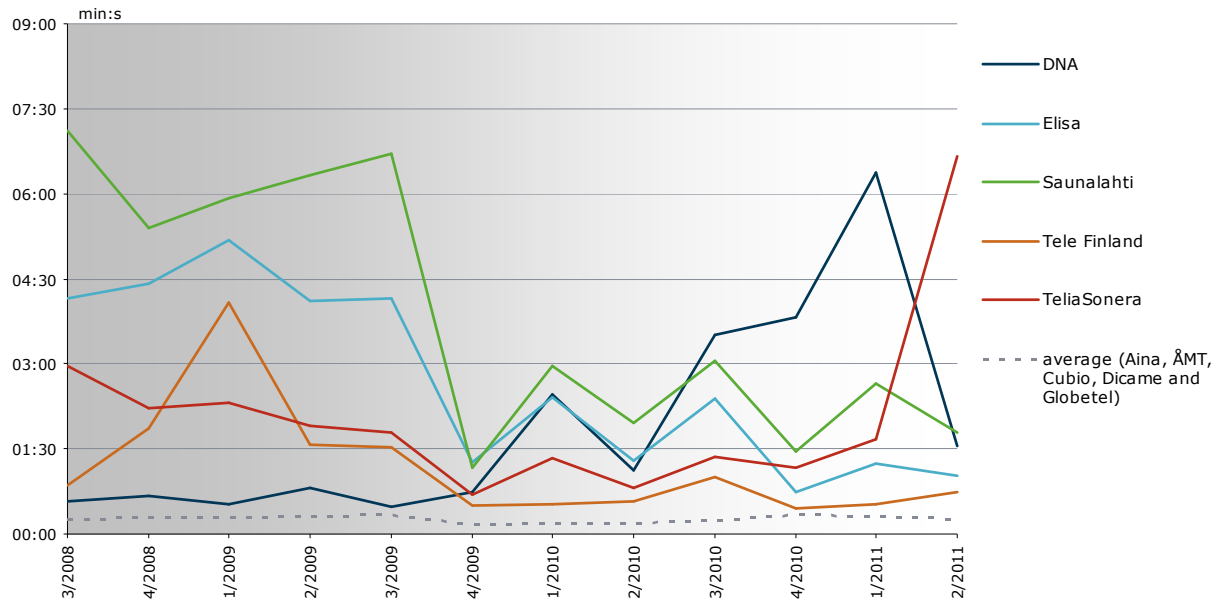


Figure 16. Response times of mobile operator customer services.

Media services

Provision of television services on the internet

In the summer of 2011, FICORA analysed the field of audiovisual services provided on the internet. The analysis included the operators providing the services, service qualities and prices.

IPTV services

Currently, telecom operators not only provide cable and antenna TV services, but often also IPTV services or TV services watched via broadband connection. All operators follow the same basic idea: users are able to watch and record basic channels, order pay-TV channels and use online movie rental services when they have access to an IPTV service provided via broadband. Normally, a connection fee and a monthly basic fee is paid for the service. The basic fee often includes limited recording space. In addition, the user pays for additional orders such as movie rentals and channel package fees.

Often a free PCTV is included in the IPTV service. It allows users to watch the basic television channels live via computer. However, many TV channels also provide live-streaming services on their websites or put their programmes available as catch-up for a limited time period.

One of the most notable features of the IPTV service is the "automatic" recording service, which is often called as the "ReTV" service. Many telecom operators include ReTV in their monthly fee. For the ReTV, the user must select the channels to be recorded, mostly from among the basic channels. In this case, the recording space covers the recording of all basic channels for seven to fourteen days. The majority of operators charge an additional fee for extra recording space. Usually, the service included in the monthly fee comprises one to twenty long-term recording spaces. The IPTV services of certain operators allow users to record full TV programmes even though the recording begins after they started.

Some operators provide packages combining broadband and TV services. Examples of such services are: Elisa's Elisa Viihde package, Sonera's Viihde and Super packages and Anvia's Anvia Koti package. All of these include a super fast broadband connection and IPTV service and other services

related to information technology and safety at homes, for which a separate fee is charged.

The channel packages provided by operators in the IPTV network are much the same as the ones in the cable network. Certain operators, such as Elisa, provide ready-made channel packages or allow users to select a certain number of channels to be included in a 'tailored package'. The majority of operators, however, provide ready-made packages or services, such as the programme services of Lumotv. Lumotv is a pay-TV service provided by the production company Super Head End Finland (SHEF) comprising Maxisat and eleven Finnet Group companies. It is a trademark of the Finnet Group whereas Maxivision is a trademark of the SHEF company for the purposes of the Maxisat group. Viewers must acquire a Lumotv starter package in order to order pay channels. It consists of the Lumotv viewing card for the cable network and four additional channels (National Geographic, Discovery Channel, Eurosport and Travel Channel). However, some operators providing Lumotv services have their own names for the IPTV service they provide (e.g. APO's Japo TV or Mikkelin Puhelin Oy's Concept.10 Laajakaista TV), in which case the service also comprises other services than Lumotv, such as the recording possibility and movie rental. The majority of IPTV services include a virtual movie rental store. All movie rental stores are based on pay-per-view principle.

The single greatest change in the field of TV players is the entry of telecom operators into the IPTV market. It has blurred the distinction between telecom and media operations and emerged as a relevant issue for TV and movie production operators. Especially the role of telecom operators in aggregating channels and their contents is still going on. Currently, telecom operators mainly function as carrying parties of existing channel packages and services, and do not participate in aggregating the contents of channels. The majority of operators do not participate in packaging channels, but deliver ready-made packages provided by other parties. The movie channel of Elisa Viihde, a SVoD service, is a borderline case. Users pay a one-time payment for a set of movies tailored by Elisa. The users are then entitled to watch certain movies for a certain period of time.

IPTV poses new challenges to production companies due to virtual video rental stores, which lack the restrictions of a physical space unique to a traditional video store. Therefore, they need to stand out from the crowd in a new

manner. It is no longer possible to influence the customers by the traditional means of marketing. The number of rental movies on an internet server can be nearly indefinite. Therefore, we need new methods to rouse the viewers' curiosity.

There is much going on in the IPTV sector: the number of new service providers is growing, and the roles of traditional release windows, as well as those of distributors, producers, buyers and broadcasters are changing. Currently, the IPTV service models provided by operators are, however, very similar everywhere. The financing is based on activation and monthly fees: by paying a monthly fee, users are able to record basic channels and additional payments give access to more channels and services. All telecom operators also require from IPTV customers that they acquire an internet connection from the same operator that provides the IPTV service. The Maxivision service of the Maxisat Group makes an exception to this.

Net TV services

For the purposes of the analysis, a net TV service refers to an audiovisual content service which functions as live streaming or VoD service in the internet. However, service providers, who perform the service as a hobby, are not taken into consideration. Occasionally, it is difficult to draw a line between services performed as a hobby or one that is performed professionally. The purpose of the analysis is to focus on such players who operate outside the traditional TV operations, and whose provision of audiovisual content is based on business operations. In addition, a cursory look was given to the entire net TV field. Therefore, the analysis includes, for example, net TV platforms for young professionals in the movie industry and other significant net TV services or those that stand out in other ways.

In the majority of the cases, the services are cost-free or partially subject to a fee. There are hardly any AV service providers in Finland that have fully chargeable online operations. The only fully chargeable Finnish service is TVKaista, which reminds of IPTV's ReTV or PCTV. Via TVKaista, viewers are able to watch the basic Finnish television channels as catch-up on a computer. Instead, all chargeable online video rental stores, such as SFAnytime and Voddler, are owned by foreign operators.

The majority of net TV services are based on streaming technology, which means that users do not download programmes on their own computer for later watching. Indietaiivas, video

rental stores and some of YLE's programmes make an exception to this. Users can watch these as podcast which means that they can download programmes on their computer and watch them when they wish.

Traditional TV operators have net TV services, but their production is mainly limited to the same material as shown on television. Examples of on-net-only programmes are extra programmes and other 'behind the scenes' type programmes. Net TV provides traditional TV viewers mainly with a catch-up service, where they can watch programmes for a limited time period (usually from a few days to a month) after the programme has been broadcast. Even the Finnish pay-TV channels, Urho TV and Toto TV have net-TV versions of their services. The programme of these two sports channels is almost identical online and on the TV channel.

In addition to the traditional TV operators, for example Moon TV, Soffa TV (also produces programmes for the cable TV) and Veikkaus TV (sports programmes) produce long programmes to be shown on the internet. In addition, several local channels have their own net TV versions. These programmes are often based on non-professional production and the picture and voice quality is weak.

Several net TV operators do not produce long programmes or series for the internet, but short video clips similar to Youtube videos. Nettitelkku.fi is an interesting example from Finland. The site calls itself as 'an online magazine'. Its short video clips on current topics remind of a magazine. The clips have been produced together with societal and business players. The videos follow a thematic division and the users can watch them in the order they wish.

The net TV services of radio channels, magazines and newspapers, and online magazines fulfil one section of the net TV branch. The net TV is not the main function of these operators, and often its main role is to support other editorial material. For example, Basso TV of Bassoradio and IS-TV of Iltasanomat do not have a key role in their production.

Net TV can in itself be used for marketing purposes, which has been exploited by Valio, for example. Valio's net TV shows videos of recipes containing Valio's products. Some of the videos and the programmes of Terve TV and Nettitelkku have themes such as health and well-being.

The net TV branch is constantly changing, so new service providers can emerge within a rela-

tively short time period. The above-described supply dates back to the summer of 2011. The analysis made by FICORA focused on Finnish service providers whose operations are based on economic activity and who must follow the national AV legislation. The analysis contained the IPTV services telecom operators provide in the broadband network and other Finnish net TV services. From the viewer's point of view, the service provider's origin makes little difference. Many net TV viewers use foreign sites for

watching their favourite shows. Shows appear on foreign pay TV sites at a quicker pace than on the corresponding Finnish ones. For many, these services and peer-to-peer networks are therefore more familiar than Finnish net TV services. It is even often possible to have Finnish subtitles for movies and TV shows downloaded from foreign sites. In this respect, the difference between foreign and Finnish services is non-existent.

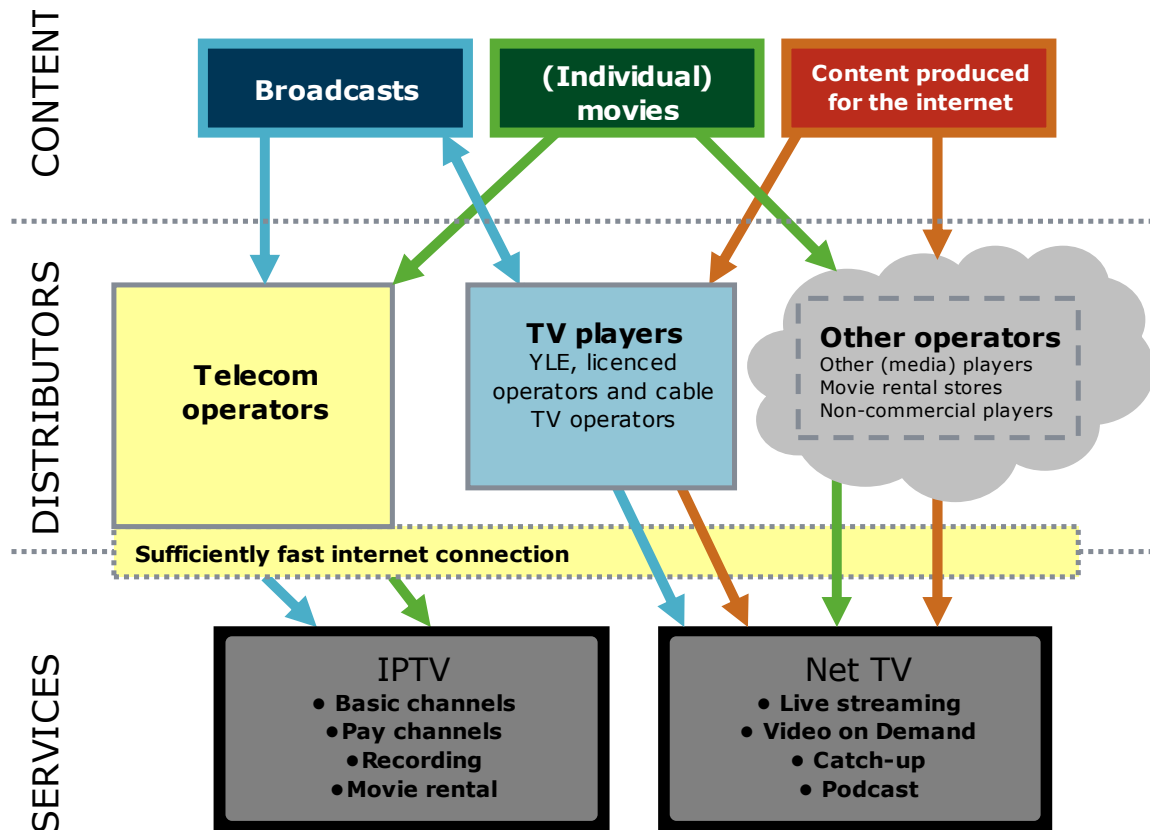


Figure 17. Provision of online television services.

Reception of television broadcasts

The share of television households of all households has remained at around 90 per cent for the past 12 months. Based on the survey results from the first half-year of 2011, almost half of TV households receive broadcasts via

cable television network, and the rest mainly via terrestrial antenna network. The share of satellite reception, which mainly completes cable and antenna reception, has remained at 5 per cent. Approximately four per cent of all TV households followed television broadcasts through IPTV. The figure is not very high, but it has doubled in six months.

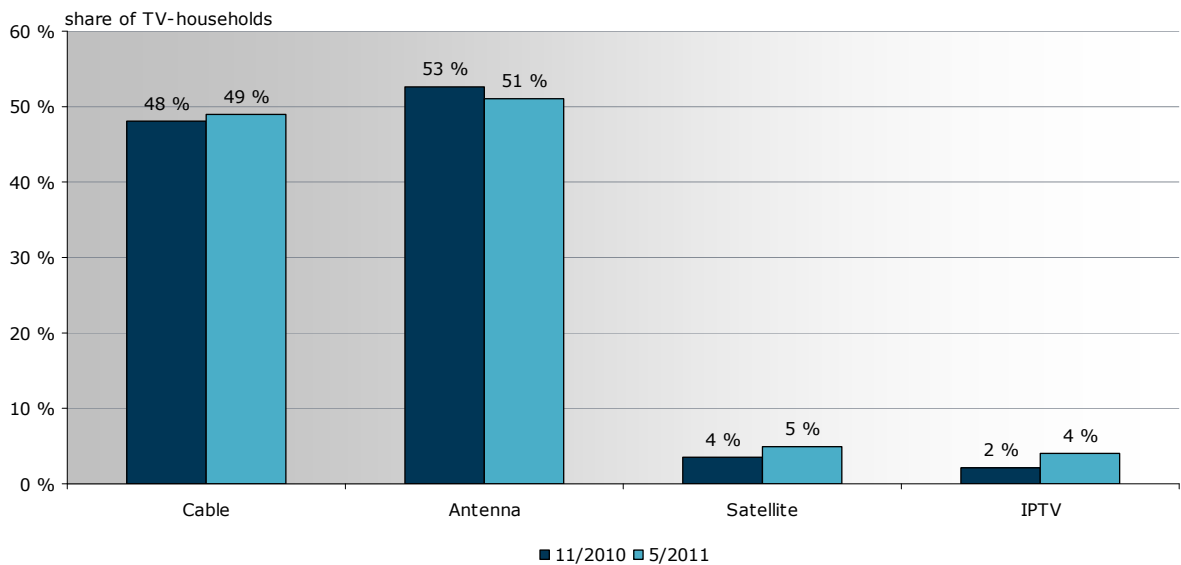


Figure 18. Broadcast reception methods in 2010 - 2011. Source: Finnpanel Oy.

The number of digital televisions or so-called integrated televisions continued to grow steadily. As many as more than 50 per cent of households had such receivers. A separate digital set-top box still holds on. In early 2011, it was the most common digital receiver with a share of 80 per cent.

The use of VCRs for recording television programmes has clearly decreased over the past six months. However, one out of five households still use them for recording purposes. Digital set-top boxes equipped with a hard disk are still the most common recording devices,

but even their share has dropped a little compared to the situation at the year-end. On the other hand, other recording devices were becoming common.

One out of ten households watch programmes recorded on their computer's hard disk. The share has doubled in six months. The increase in the share of DVD and Blu-rays can be explained by the fact that recording via game consoles is now included in this group. Approximately three per cent of TV households record programmes on the television's own hard disk, as well as via the broadband operator's server.

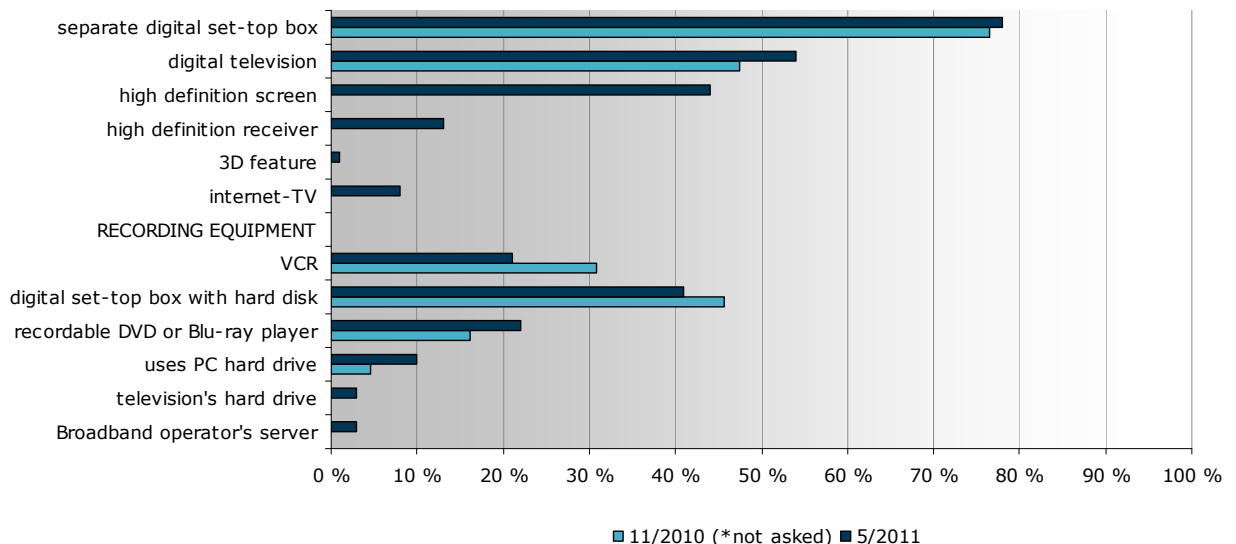


Figure 19. The penetration of receivers in TV households 2010 - 2011. Source: Finnpanel Oy.

Postal services

The current Postal Act, which entered into force on 1 June 2011, implemented the third Postal Directive of the EU (2008/6/EY6). The key objective of the new Postal Directive is to open the European postal service markets to full competition in all postal delivery services. An example of a postal service entity that the Directive is expected to influence is correspondence item services.

Postal services and, for the purposes of this report, postal delivery services can be divided into letter, magazine and newspaper, parcel delivery as well as unaddressed postal items. Letter delivery is subject to a licence. Currently, only Itella Posti Oy (Itella) has a licence that gives the right to deliver addressed letters in Finland. In late August 2011, Esan Kirjapaino Oy notified that it had applied for a licence from the Government to be used in the area of Päijät-Häme. Besides delivering newspapers, Esa Jakelut Oy, a subsidiary of Esan Kirjapaino Oy, is planning to also carry out letter delivery in Päijät-Häme, if the licence will be granted to it.

In practice, Itella has no competitors in letter delivery or magazine delivery, because magazines are delivered in connection with letter de-

livery. In letter and magazine delivery, Itella's market share approaches 100 per cent in continental Finland. Even in newspaper delivery services, there is very little competition, because Itella is the only one to provide nationwide newspaper delivery. The newspapers' own distribution organisations, which deliver their own papers locally, are an alternative for Itella. Itella's market share of newspaper delivery is approximately three-fourths.

Itella has nationwide competitors in parcel delivery and unaddressed mail delivery. There, Itella's market share is about 50 per cent.

Key economic figures of postal operations

The domestic postal delivery services in Finland generated a turnover of about EUR 1.1 billion in 2010. The share of letters is slightly more than 40 per cent or EUR 500 million. The share of magazine and newspaper delivery is roughly 25 per cent or almost EUR 300 million, whereas that of parcel delivery is less than 25 per cent or more than EUR 250 million. The share of unaddressed items was eight per cent or less than EUR 100 million.

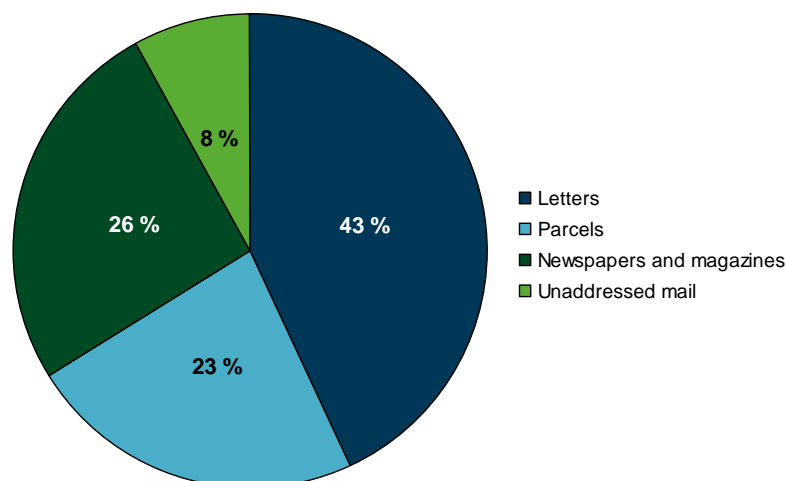


Figure 20. Turnover of the Finnish postal items market.

In Finland, there is only one operator providing all postal delivery services nationwide - Itella. It is a strong operator in all postal item types: letters, newspapers and magazines, parcels and unaddressed items. Itella has the following competitors in parcel delivery: Matkahuolto Oy (Matkahuolto), Posten Logistik SCM Oy (Posten Logistik), Rautakirja Oy (Rautakirja) and VR LTL Logistics (Transpoint Oy until 2010). All these have a nationwide network of service points

where consumers can send and fetch parcels. In unaddressed items, competing with Itella is a group of companies operating under the name Suomen Suoramainonta (SSM).

In parcel services, Posten Logistik is better known for its MyPack parcel service product, whereas Rautakirja is known for its Ärräpaketti and ÄrräExpress products. The SSM companies consists of a group of regional companies which

are responsible for delivering city newspapers and advertisements in their distribution areas. The majority of the companies in the SSM Jake-luryhmä are owned by Janton Oy.

The presentation of the key economic figures of the above-mentioned postal operators is based on the final accounts analysis of Balance Con-sulting. Balance Consulting has consistently re-stated the final accounts in its analyses. Parcel services constitute a very small part of Rau-takirja Oy's turnover. Until the end of 2010, VR LTL Logistics operated as a separate company under the name Transpoint Oy and was merged with VR-Group Ltd on 31 December 2010. The key economic figures of VR LTL Logistics are presented on the basis of Transpoint Oy's final account values. The key economic figures of the SSM companies are presented on the basis of Janton Group's final accounts. Belonging to the Janton Group is also Cityexpress Oy, which pub-

lishes the City magazine with an annual turn-over of EUR 3.8 million in 2009.

The size of Itella's turnover shows that it is by far the largest company providing postal ser-vices in Finland. The turnovers, equity ratio and operating profits of Itella, as well as those of Matkahuolto, a long-term operator in the Fin-nish postal market, have been rather stable for the past years. Instead, there has been a large fluctuation in the return on capital investment. Posten Logistik is a newcomer in Finland, but it has, however, multiplied its turnover over the past few years. Currently, Posten Logistik is the size of Matkahuolto. The key figures of Janton Group, which provides unaddressed postal item services, indicate that it is delivering an excel-lent financial result. Operators carrying out postal and courier activities are usually small companies with a turnover of one or two million euros. They deliver parcels locally and their re-turn on investment is very good.

Company	Turnover M€			Operating profit %			Equity ratio %			Return on capital investment %		
	2008	2009	2010	2008	2009	2010	2008	2009	2010	2008	2009	2010
Itella Oyj	1283	1207	1174	7	5	4	66	55	57	10	1	6
Matkahuolto Oy	45	49	49	-3	-2	2	20	18	20	-10	-5	15
Posten Logistik SCM Oy	12	47	53	3	-1	-3	26	26	22	17	-11	-27
Rautakirja Oy	387	384	381	7	8	3	48	42	40	19	18	8
Transpoint Oy	142	114	122	3	-5	1	53	48	48	17	-19	6
Janton Group	45	40		20	18		61	62		139	98	
Median of the branch: Postal and courier activities	1	1	2	5	4	3	27	29	28	27	23	28

Table 8. Key figures of postal operators.

The investment rates of companies carrying out postal operations are variable. As the largest operator, Itella invests the most, which is un-derstandable, because it has both a nationwide network of service points and delivery centres. Investments made in these are also very cyclic,

which can be seen in the figure below. Matka-huolto, Rautakirja and Transpoint Oy own a na-tionwide network of service points. The invest-ment rates of these companies have been clearly higher than those of postal and courier service operators in general.

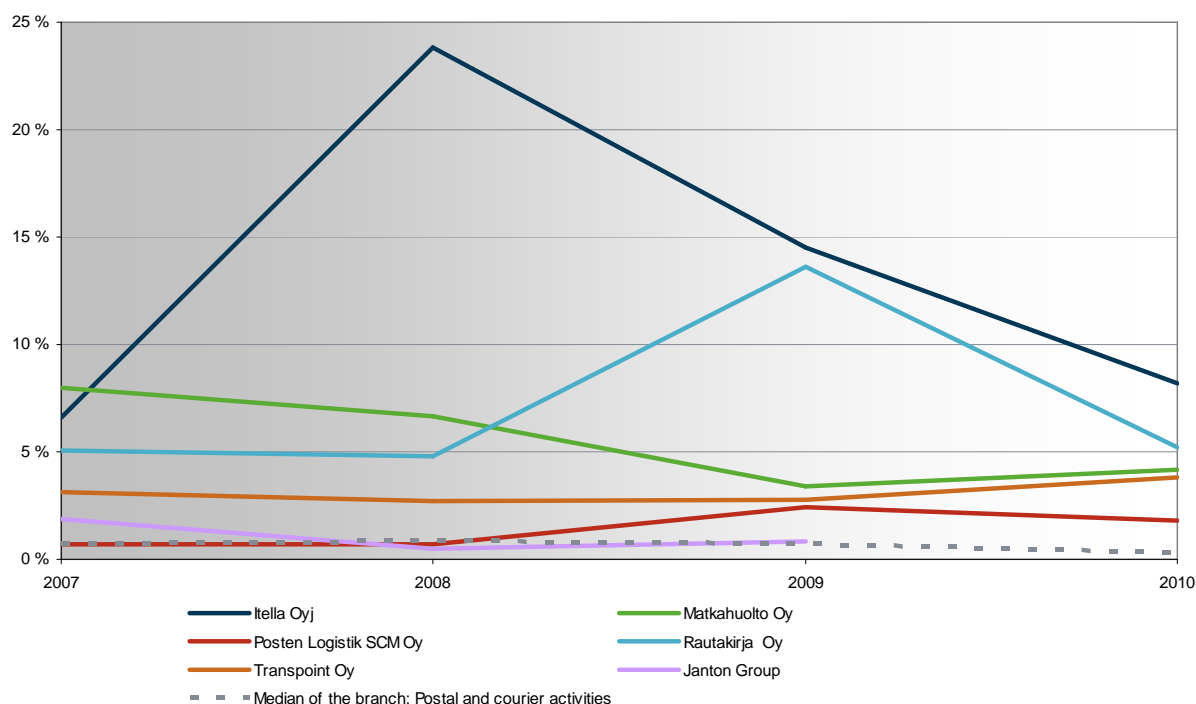


Figure 21. Investment rates of postal service operators.

Volume of postal items

According to the statistics for 2010, the total number of domestic postal deliveries amounted to roughly four billion. Approximately half of it or nearly two billion was unaddressed mail (direct marketing letters and free sheets). The increase from the previous year's result was three per cent. The number of letters dropped by one per cent and remained at slightly more than one billion pieces. The volume of newspaper delivery

also dropped by one per cent to 700 million pieces. The sharpest fall was seen in the number of magazines, which was affected the most out of all of the postal item types. They fell by as much as eight per cent or 339 million pieces. The domestic parcel delivery volumes remained at the same level as the year before, that is 36 million pieces. Instead, the volume of international mail grew by as much as 11 per cent to 10 million pieces. The growth of international mail was based on the sharp rise in the number of parcels sent to Finland in 2010.

Year	2009	2010
All deliveries	4110	4117
letters	1129	1114
parcels	45	46
Domestic deliveries	4044	4051
letters	1072	1058
parcels	36	36
unaddressed mail	1861	1923
newspapers	705	695
magazines	370	339
International deliveries	66	66
letters	57	56
parcels	9	10

Table 9. Postal item volumes.

Time of letter delivery

With the new Postal Act entering into force on 1 June 2011, the assessment of the transit time for the first half-year was based on the previous Postal Act.

According to the previous Postal Act, at least 85 percent of domestic letters belonging to universal service and submitted to the postal company for delivery on the following day (i.e. the so-called 1st class letters) must be delivered on the next working day following sending, and at least 98 per cent must be delivered by the second working day following sending. Itella monitors the delivery time of 1st class letters through a continuous panel survey. During the first two quarters of 2011, Itella has met the quality standard set for the time of delivery as required by law. During both quarters, at least 92 per cent of the 1st class letters had been delivered by the next working day and at least nearly 99 per cent had been delivered by the second working day following sending.

During the second half-year of 2011, the quality standard for transit time included in the current Postal Act will be monitored.

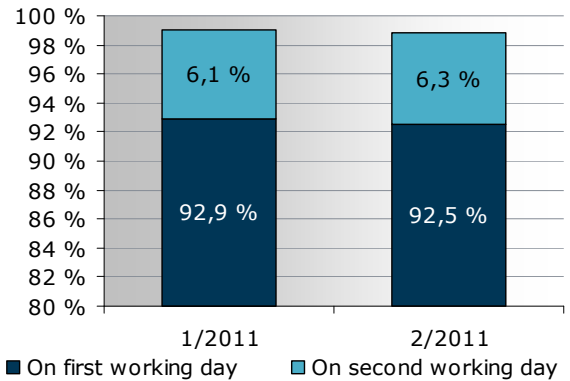


Figure 22. Transit time of 1st class letters during the first half of 2011.

The number of service points

In Finland, the following operators have a nationwide network of service points: Itella, Matkahuolto, Posten Logistik, Rautakirja, VR LTL Logistics. Itella offers services at approximately 1,050 service points (Itella's own service points and franchised post offices), Matkahuolto and Posten Logistik both have nearly 1,200 service points (the service points of Matkahuolto and Suomen Lähikauppa Oy). Rautakirja's network encompasses about 700 service points of R kiosks. VR LTL Logistics has a network of 25 service points consisting of points mainly located in connection with train stations.



**Finnish Communications
Regulatory Authority**

**Finnish Communications Regulatory
Authority**

P.O. Box 313

Itämerenkatu 3A

FI-00181 Helsinki

tel. +358 9 69 661

fax. + 358 9 6966 410

www.ficora.fi