

# Mobile Advertising Forecasts

2017



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# Mobile Advertising Forecasts 2017

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# We are pleased to introduce the second edition of Zenith's *Mobile Advertising Forecasts*.

This edition looks at mobile advertising and mobile technology in 52 key countries around the world. It forecasts the rising amount of time consumers devote to mobile internet use, the spread of smartphones and tablets, and the growth of mobile adspend, and provides commentaries on the state of mobile advertising.

In 2018, 66% of individuals in 52 key countries will own a smartphone, up from 63% in 2017 and 58% in 2016. The rapid expansion of smartphone ownership across the world, which has transformed the way that advertisers communicate with consumers, is slowing down as penetration reaches 80%-90% in the most advanced markets. The number of smartphone owners will increase by 7% year on year in 2018, compared to 10% growth in 2017, 14% in 2016 and 21% in 2015.

The spread of smartphones and other mobile devices is increasing the number of contacts between brands and consumers, by giving consumers new opportunities to connect to media content wherever they are, at any time in the day. Some of these contacts take the form of paid advertising in third-party content, but mobile technology is also enabling broader brand experiences, such as branded content and social media engagement.

Western Europe and Asia Pacific continue to lead the world in smartphone ownership. We predict that five markets will have smartphone penetration above 90% in 2018: the Netherlands [94%], Taiwan [93%], Hong Kong [92%], Norway and Ireland (each at 91%). 11 markets will have penetration levels between 80% and 90%, all of them in Western Europe and Asia Pacific with the exception of Israel, where penetration will be 86%.

The country with the highest number of smartphone users will be China, with 1.3 billion users, followed by India, with 530 million users. The US will be third, with 229 million users.

## *Tablet penetration stabilising at about 20%*

Tablet ownership is much less common than smartphone ownership, partly because they are more likely to be shared within households, and partly because consumers in some markets prefer to use larger smartphones instead. Tablets

have not caught on at all in China, where we estimate their penetration at just 4.8% this year, compared to 85.4% for smartphones. Tablet penetration is even declining in Thailand.

Tablet ownership varies widely across the 52 countries in this report; it exceeds 50% in 12 markets, and is lower than 10% in seven. Tablet ownership is most common in the Netherlands [at 74% penetration is year], Australia [66%] and Ireland [65%].

Globally, we estimate tablet penetration at 18.7% this year, up slightly from 17.8% in 2016. It appears to be stabilising at about 20%: we forecast penetration levels of 19.5% in 2018 and 20.1% in 2019.

## *Mobile devices to account for 73% of internet consumption in 2018*

Mobile devices (including both smartphones and tablets) are now the primary means of accessing the internet for most users, and will account for 73% of time spent using the internet in 2018, up from 70% in 2017 and 65% in 2016. Mobile internet use has doubled since 2011, when it accounted for 36% of all internet use. By 2019, we expect it to account for 76%.

The markets where mobile devices have the highest shares of internet use are geographically diverse. Spain is top, with an estimated 81% of internet use coming from mobile devices this year, followed by Italy [78%], China and the US (each at 77%) and India [73%].

## *59% of internet advertising expenditure will be mobile in 2018*

As we have documented in our quarterly Advertising Expenditure Forecasts, the amount of money spent on internet ads going to mobile ads has overtaken the amount spent on desktop ads for the first time this year. We estimate that 53% of all internet adspend will go to ads viewed on mobile devices in 2017, and forecast that proportion to rise to 59% in 2018 and 62% in 2019. In 2019 mobile adspend will total US\$156 billion, and account for 26% of adspend across all media.

# Summary tables

# Worldwide summary

## Smartphone penetration (%)

|                          | 2010       | 2011        | 2012        | 2013        | 2014        | 2015        | 2016        | 2017        | 2018        | 2019        |
|--------------------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Argentina                | 6.2        | 7.1         | 13.0        | 19.0        | 30.8        | 38.9        | 60.4        | 66.7        | 72.6        | 78.4        |
| Australia                | 32.0       | 48.0        | 55.0        | 60.5        | 65.9        | 71.9        | 79.9        | 86.0        | 89.0        | 90.0        |
| Austria                  | 20.0       | 26.0        | 37.0        | 48.1        | 59.2        | 65.5        | 71.1        | 76.1        | 80.6        | 83.9        |
| Belarus                  | -          | -           | -           | -           | -           | 54.4        | 57.0        | 58.5        | 60.0        | 62.0        |
| Belgium                  | 11.6       | 14.6        | 18.5        | 39.2        | 41.1        | 45.6        | 78.0        | 85.0        | 87.0        | 89.0        |
| Bosnia-Herzegovina       | 11.0       | 13.9        | 16.8        | 18.5        | 22.0        | 40.0        | 45.0        | 50.0        | 60.0        | 65.0        |
| Bulgaria                 | -          | -           | -           | 28.0        | 33.0        | 48.0        | 53.0        | 58.0        | 62.0        | 64.2        |
| Canada                   | 17.7       | 24.3        | 34.5        | 39.4        | 50.2        | 55.7        | 59.9        | 62.8        | 64.6        | 65.6        |
| China                    | -          | -           | 23.9        | 51.0        | 58.4        | 69.9        | 79.8        | 85.4        | 89.7        | 92.3        |
| Colombia                 | 5.6        | 11.6        | 14.5        | 24.8        | 35.0        | 37.0        | 40.3        | 46.3        | 53.3        | 61.3        |
| Czech Republic           | -          | -           | 17.0        | 26.0        | 36.0        | 46.0        | 53.0        | 58.0        | 62.0        | 71.0        |
| Denmark                  | 28.0       | 30.0        | 45.0        | 48.0        | 59.0        | 67.0        | 75.0        | 80.0        | 85.0        | 90.0        |
| Ecuador                  | -          | 8.4         | 15.4        | 25.2        | 39.0        | 45.0        | 50.0        | 55.3        | 65.8        | 73.2        |
| Estonia                  | 6.4        | 9.1         | 10.3        | 17.2        | 25.0        | 48.0        | 60.0        | 65.0        | 68.0        | 70.0        |
| Finland                  | -          | 42.0        | 49.0        | 55.0        | 65.0        | 67.0        | 73.0        | 75.0        | 80.0        | 81.0        |
| France                   | 27.4       | 35.3        | 43.0        | 49.1        | 55.2        | 60.0        | 64.7        | 69.2        | 73.4        | 77.1        |
| Germany                  | 12.6       | 23.0        | 32.0        | 40.5        | 56.0        | 64.5        | 71.7        | 77.3        | 81.3        | 85.3        |
| Greece                   | -          | -           | -           | 22.2        | 32.0        | 39.9        | 48.9        | 57.6        | 62.0        | 64.5        |
| Hong Kong                | -          | -           | -           | 56.2        | 71.7        | 84.7        | 91.0        | 91.5        | 92.0        | 92.5        |
| Hungary                  | 5.0        | 17.0        | 23.0        | 26.8        | 39.0        | 44.1        | 50.5        | 54.5        | 57.3        | 60.1        |
| India                    | 3.0        | 5.0         | 9.0         | 14.5        | 21.2        | 28.8        | 32.7        | 36.6        | 39.4        | 42.7        |
| Ireland                  | -          | 35.0        | 42.0        | 50.0        | 60.0        | 70.0        | 83.0        | 88.0        | 91.0        | 93.0        |
| Israel                   | -          | -           | -           | -           | -           | 73.9        | 82.9        | 84.2        | 86.2        | 87.8        |
| Italy                    | 13.0       | 24.0        | 31.4        | 41.0        | 48.9        | 57.0        | 61.8        | 64.9        | 67.9        | 68.5        |
| Japan                    | 9.7        | 29.3        | 49.5        | 62.6        | 72.5        | 77.3        | 80.0        | 82.4        | 84.2        | 85.0        |
| Latvia                   | -          | -           | -           | 19.0        | 27.0        | 47.0        | 55.0        | 62.0        | 68.0        | 73.0        |
| Lithuania                | -          | 13.6        | 17.0        | 28.8        | 35.1        | 44.7        | 47.6        | 59.4        | 63.0        | 65.0        |
| Malaysia                 | -          | -           | -           | -           | -           | 68.0        | -           | -           | -           | -           |
| Mexico                   | -          | 8.0         | 12.6        | 19.2        | 42.8        | 42.8        | 57.8        | 68.2        | 72.7        | 79.1        |
| Netherlands              | 32.0       | 45.0        | 58.0        | 67.0        | 76.0        | 80.0        | 83.0        | 89.4        | 93.9        | 97.6        |
| New Zealand              | 9.9        | 41.2        | 45.1        | 50.0        | 60.0        | 70.0        | 73.5        | 77.2        | 81.0        | 85.1        |
| Norway                   | 33.0       | 54.0        | 66.0        | 72.2        | 81.0        | 83.4        | 85.9        | 88.5        | 91.2        | 92.0        |
| Pakistan                 | 1.7        | 2.5         | 3.5         | 5.0         | 9.0         | 11.0        | 20.4        | 29.0        | 36.0        | 40.0        |
| Peru                     | 6.0        | 5.0         | 8.0         | 12.0        | 26.0        | 34.0        | 55.0        | 65.0        | 70.0        | 73.0        |
| Philippines              | -          | 4.1         | 4.2         | 9.0         | 18.7        | 24.5        | 37.3        | 51.1        | 58.3        | 62.4        |
| Poland                   | -          | -           | -           | 22.6        | 30.4        | 49.1        | 56.5        | 61.6        | 64.0        | 65.3        |
| Portugal                 | -          | -           | -           | 31.4        | 40.9        | 52.0        | 62.4        | 68.6        | 73.2        | 76.1        |
| Romania                  | -          | -           | 12.0        | 28.0        | 34.0        | 46.0        | 53.0        | 57.0        | 59.0        | 59.0        |
| Russia                   | -          | 17.2        | 23.2        | 32.9        | 44.8        | 53.9        | 59.5        | 68.5        | 75.4        | 79.1        |
| Serbia                   | 19.0       | 24.0        | 29.0        | 32.0        | 38.0        | 47.7        | 60.4        | 65.5        | 68.0        | 70.1        |
| Singapore                | 65.0       | 68.0        | 70.0        | 72.0        | 77.0        | 82.5        | 83.0        | 84.0        | 85.0        | 85.7        |
| Slovakia                 | -          | -           | -           | 29.3        | 32.4        | 44.7        | 50.0        | 53.0        | 56.0        | 59.0        |
| South Africa             | 11.2       | 15.8        | 21.9        | 37.2        | 47.8        | 51.1        | 61.9        | 70.8        | 79.7        | 83.0        |
| South Korea              | 14.5       | 42.5        | 60.0        | 79.7        | 82.3        | 83.0        | 83.5        | 83.9        | 84.2        | 84.5        |
| Spain                    | 37.6       | 51.0        | 65.8        | 78.2        | 86.7        | 87.0        | 87.7        | 88.2        | 88.9        | 89.0        |
| Sweden                   | 36.0       | 52.0        | 50.4        | 63.9        | 72.0        | 77.2        | 80.6        | 81.7        | 83.0        | 84.2        |
| Switzerland              | -          | 34.0        | 43.0        | 54.0        | 65.0        | 70.0        | 72.0        | 75.0        | 77.0        | 79.0        |
| Taiwan                   | 7.6        | 15.0        | 27.4        | 45.3        | 62.8        | 70.8        | 84.8        | 89.0        | 93.0        | 95.0        |
| Thailand                 | -          | -           | -           | -           | 28.2        | 44.4        | 48.0        | 52.6        | 56.0        | 60.0        |
| Ukraine                  | -          | 6.7         | 12.6        | 17.5        | 25.4        | 28.7        | 33.8        | 41.6        | 52.6        | 70.4        |
| United Kingdom           | 23.0       | 31.0        | 41.0        | 43.0        | 49.0        | 55.0        | 60.0        | 65.0        | 69.0        | 72.3        |
| United States of America | -          | 33.5        | 45.8        | 46.3        | 53.6        | 59.3        | 63.9        | 67.3        | 69.6        | 71.0        |
| <b>Average</b>           | <b>6.7</b> | <b>14.7</b> | <b>21.9</b> | <b>34.6</b> | <b>42.4</b> | <b>50.6</b> | <b>57.5</b> | <b>62.7</b> | <b>66.5</b> | <b>69.5</b> |

## Tablet penetration (%)

|                          | 2010       | 2011       | 2012       | 2013        | 2014        | 2015        | 2016        | 2017        | 2018        | 2019        |
|--------------------------|------------|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Argentina                | -          | -          | 0.8        | 1.8         | 3.1         | 4.7         | 5.7         | 6.4         | 7.0         | 7.2         |
| Australia                | 3.9        | 13.0       | 15.3       | 33.0        | 41.0        | 45.1        | 48.2        | 65.7        | 69.0        | 71.0        |
| Austria                  | 2.0        | 5.0        | 10.0       | 20.0        | 36.9        | 44.2        | 50.5        | 55.6        | 60.0        | 63.6        |
| Belarus                  | -          | -          | -          | -           | -           | -           | -           | -           | -           | -           |
| Belgium                  | -          | -          | -          | 26.8        | 27.5        | 32.2        | 44.0        | 50.0        | 51.0        | 53.0        |
| Bosnia-Herzegovina       | -          | -          | 0.5        | 1.0         | 2.0         | 3.0         | 4.5         | 6.8         | 10.1        | 12.2        |
| Bulgaria                 | -          | -          | -          | 8.0         | 15.0        | 22.0        | 26.0        | 29.0        | 32.0        | 34.5        |
| Canada                   | -          | 6.0        | 15.0       | 22.5        | 42.0        | 48.2        | 52.0        | 55.6        | 57.4        | 58.4        |
| China                    | -          | -          | 0.7        | 1.6         | 2.5         | 3.1         | 3.9         | 4.8         | 5.8         | 6.6         |
| Colombia                 | -          | 0.8        | 3.2        | 11.3        | 19.4        | 25.0        | 26.3        | 27.6        | 28.9        | 30.4        |
| Czech Republic           | -          | -          | 5.0        | 11.0        | 19.0        | 24.0        | 28.0        | 31.0        | 33.0        | 35.0        |
| Denmark                  | -          | -          | -          | 47.0        | 55.0        | 60.0        | 62.0        | 63.0        | 70.0        | 75.0        |
| Ecuador                  | -          | 2.0        | 4.0        | 7.0         | 10.0        | 13.0        | 16.0        | 18.1        | 20.9        | 24.7        |
| Estonia                  | 0.5        | 1.0        | 2.5        | 7.8         | 15.0        | 28.2        | 30.0        | 31.2        | 33.0        | 34.8        |
| Finland                  | 4.0        | 7.0        | 12.0       | 22.0        | 28.0        | 32.0        | 43.0        | 40.0        | 39.0        | 40.0        |
| France                   | -          | 4.1        | 12.8       | 27.7        | 43.0        | 52.0        | 54.0        | 56.2        | 58.4        | 60.7        |
| Germany                  | 2.0        | 4.8        | 18.2       | 24.9        | 34.2        | 38.4        | 42.5        | 45.8        | 48.4        | 49.0        |
| Greece                   | -          | -          | -          | 0.3         | 2.4         | 6.1         | 9.6         | 9.6         | 11.5        | 11.9        |
| Hong Kong                | -          | -          | -          | 21.2        | 27.0        | 35.5        | 45.7        | 44.1        | 45.0        | 45.0        |
| Hungary                  | -          | -          | -          | 5.7         | 9.0         | 11.9        | 14.0        | 16.1        | 18.5        | 21.3        |
| India                    | 2.7        | 4.8        | 11.0       | 13.9        | 15.0        | 15.5        | 15.6        | 15.6        | 15.7        | 15.8        |
| Ireland                  | -          | 8.0        | 15.0       | 24.0        | 35.0        | 53.0        | 60.0        | 65.0        | 68.0        | 70.0        |
| Israel                   | -          | -          | -          | 11.6        | 34.1        | 39.2        | 40.4        | 38.3        | 40.2        | 41.1        |
| Italy                    | 2.4        | 4.9        | 14.9       | 19.6        | 25.3        | 29.0        | 32.1        | 35.0        | 37.2        | 38.5        |
| Japan                    | 7.2        | 8.5        | 15.3       | 21.9        | 34.2        | 37.4        | 39.5        | 41.1        | 42.0        | 43.0        |
| Latvia                   | -          | -          | -          | 7.0         | 11.0        | 19.0        | 22.0        | 25.0        | 26.0        | 27.0        |
| Lithuania                | -          | 0.5        | 1.2        | 3.1         | 7.3         | 13.7        | 20.1        | 18.7        | 20.0        | 21.0        |
| Malaysia                 | -          | -          | -          | -           | -           | 32.0        | -           | -           | -           | -           |
| Mexico                   | -          | -          | 2.2        | 4.3         | 10.5        | 10.5        | 11.2        | 11.8        | 12.6        | 13.3        |
| Netherlands              | 10.0       | 14.5       | 34.0       | 53.5        | 62.0        | 65.0        | 67.0        | 74.0        | 77.7        | 84.7        |
| New Zealand              | -          | 2.8        | 8.6        | 18.8        | 20.7        | 22.8        | 25.0        | 27.6        | 30.3        | 33.3        |
| Norway                   | 2.0        | 11.0       | 28.6       | 44.2        | 56.8        | 58.5        | 60.3        | 62.1        | 63.9        | 65.0        |
| Pakistan                 | -          | -          | -          | -           | -           | -           | -           | -           | -           | -           |
| Peru                     | -          | -          | 3.0        | 4.9         | 9.6         | 10.7        | 15.0        | 18.0        | 20.0        | 22.0        |
| Philippines              | -          | -          | 0.2        | 1.4         | 3.9         | 4.3         | 5.7         | 6.2         | 7.5         | 8.0         |
| Poland                   | -          | -          | -          | -           | 18.5        | 24.2        | 26.2        | 28.0        | 28.6        | 29.2        |
| Portugal                 | -          | -          | 3.8        | 8.8         | 15.1        | 21.1        | 25.4        | 30.4        | 36.5        | 39.2        |
| Romania                  | -          | -          | 3.0        | 6.0         | 13.0        | 23.0        | 24.0        | 25.0        | 25.0        | 25.0        |
| Russia                   | -          | -          | -          | -           | -           | 21.0        | 21.9        | 23.7        | 23.7        | 23.7        |
| Serbia                   | -          | -          | 0.5        | 5.0         | 10.0        | 16.0        | 24.7        | 31.2        | 35.2        | 37.5        |
| Singapore                | 5.0        | 10.0       | 17.0       | 40.0        | 47.0        | 49.4        | 50.8        | 52.4        | 53.2        | 54.3        |
| Slovakia                 | -          | -          | 1.7        | 3.7         | 16.0        | 22.2        | 22.5        | 24.2        | 26.0        | 29.0        |
| South Africa             | -          | -          | 1.8        | 3.7         | 5.5         | 8.9         | 10.8        | 13.1        | 15.4        | 17.2        |
| South Korea              | 1.0        | 3.1        | 7.5        | 13.9        | 18.2        | 20.2        | 22.0        | 23.6        | 25.0        | 25.4        |
| Spain                    | -          | -          | 11.9       | 24.7        | 31.8        | 32.0        | 32.5        | 32.7        | 33.0        | 33.2        |
| Sweden                   | -          | -          | -          | 35.0        | 50.1        | 57.4        | 58.4        | 57.4        | 57.0        | 57.0        |
| Switzerland              | -          | 5.9        | 8.6        | 23.0        | 39.0        | 43.0        | 46.0        | 49.0        | 52.0        | 54.0        |
| Taiwan                   | -          | 4.4        | 8.6        | 15.9        | 21.9        | 38.2        | 36.8        | 34.0        | 34.0        | 34.0        |
| Thailand                 | -          | -          | -          | -           | 3.7         | 3.4         | 2.8         | 1.0         | 1.0         | 0.5         |
| Ukraine                  | -          | 1.0        | 1.9        | 4.5         | 9.5         | 13.4        | 14.2        | 16.1        | 19.3        | 21.9        |
| United Kingdom           | 3.5        | 9.4        | 20.1       | 29.7        | 39.7        | 51.0        | 58.4        | 59.0        | 60.1        | 60.9        |
| United States of America | -          | 13.1       | 17.6       | 41.8        | 46.7        | 49.4        | 51.4        | 52.7        | 53.7        | 54.2        |
| <b>Average</b>           | <b>1.9</b> | <b>4.6</b> | <b>6.9</b> | <b>11.5</b> | <b>14.5</b> | <b>16.8</b> | <b>17.8</b> | <b>18.7</b> | <b>19.5</b> | <b>20.1</b> |

## Mobile advertising expenditure (US\$m)

|                          | 2010 | 2011  | 2012  | 2013  | 2014   | 2015   | 2016   | 2017   | 2018   | 2019   |
|--------------------------|------|-------|-------|-------|--------|--------|--------|--------|--------|--------|
| Argentina                | -    | -     | -     | 1     | 2      | 5      | 14     | 28     | 50     | 72     |
| Australia                | -    | -     | -     | -     | 753    | 1,458  | 2,110  | 2,623  | 2,968  | 3,361  |
| Austria                  | 13   | 23    | 26    | 42    | 86     | 109    | 134    | 159    | 203    | 228    |
| Belarus                  | -    | -     | -     | -     | 0      | 0      | 0      | 1      | 1      | 1      |
| Belgium                  | -    | -     | -     | -     | 75     | 70     | 71     | 76     | 86     | 98     |
| Bosnia-Herzegovina       | -    | -     | -     | -     | -      | -      | -      | -      | -      | -      |
| Bulgaria                 | -    | -     | -     | -     | 0      | 1      | 2      | -      | -      | -      |
| Canada                   | 35   | 61    | 121   | 322   | 681    | 1,222  | 1,918  | 2,512  | 3,040  | 3,466  |
| China                    | 43   | 154   | 779   | 2,003 | 5,623  | 14,398 | 23,947 | 31,419 | 37,996 | 43,491 |
| Colombia                 | 0    | 0     | 1     | 2     | 3      | 6      | 15     | 32     | 54     | 70     |
| Czech Republic           | -    | -     | -     | -     | -      | -      | -      | -      | -      | -      |
| Denmark                  | -    | 4     | 6     | 12    | 18     | 26     | 36     | 51     | 71     | 92     |
| Ecuador                  | -    | 0     | 0     | 1     | 2      | 2      | 11     | 13     | 15     | 20     |
| Estonia                  | 0    | 0     | 0     | 0     | 2      | 4      | 6      | 8      | 10     | 12     |
| Finland                  | -    | -     | -     | -     | -      | 64     | 79     | 105    | 131    | 159    |
| France                   | 58   | 124   | 162   | 287   | 569    | 934    | 1,575  | 2,084  | 2,645  | 3,248  |
| Germany                  | -    | -     | -     | 97    | 148    | 231    | 351    | 534    | 814    | 1,235  |
| Greece                   | -    | -     | -     | -     | -      | -      | -      | -      | -      | -      |
| Hong Kong                | -    | -     | 3     | 23    | 60     | 83     | 94     | 172    | 240    | 312    |
| Hungary                  | -    | 1     | 3     | 6     | 14     | 28     | 39     | 51     | 64     | 80     |
| India                    | -    | -     | 16    | 40    | 56     | 79     | 103    | 145    | 174    | 209    |
| Ireland                  | -    | -     | -     | -     | 135    | 162    | 184    | 220    | 256    | 287    |
| Israel                   | -    | -     | -     | 12    | 15     | 22     | 22     | 26     | 31     | 34     |
| Italy                    | -    | -     | -     | 214   | 330    | 506    | 745    | 968    | 1,210  | 1,411  |
| Japan                    | -    | -     | 963   | 2,482 | 4,046  | 5,772  | 7,211  | 8,324  | 9,122  | 10,217 |
| Latvia                   | -    | -     | -     | -     | -      | 2      | 5      | 5      | 6      | 8      |
| Lithuania                | -    | -     | -     | 0     | 1      | 1      | 2      | 2      | 3      | 3      |
| Malaysia                 | -    | -     | -     | -     | 68     | 74     | 77     | 90     | 99     | 109    |
| Mexico                   | -    | 16    | 33    | 70    | 167    | 319    | 432    | 562    | 714    | 742    |
| Netherlands              | -    | -     | -     | 139   | 216    | 297    | 454    | 588    | 939    | 1,026  |
| New Zealand              | -    | 0     | 21    | 33    | 99     | 128    | 179    | 225    | 248    | 273    |
| Norway                   | -    | -     | 10    | 42    | 65     | 150    | 205    | 223    | 257    | 287    |
| Pakistan                 | -    | -     | -     | -     | -      | -      | -      | -      | -      | -      |
| Peru                     | -    | -     | -     | -     | -      | -      | -      | -      | -      | -      |
| Philippines              | -    | -     | -     | -     | -      | -      | -      | -      | -      | -      |
| Poland                   | -    | -     | -     | -     | -      | 78     | 100    | 139    | 168    | 195    |
| Portugal                 | -    | -     | -     | -     | -      | -      | -      | -      | -      | -      |
| Romania                  | 0    | 0     | 0     | 0     | 1      | 1      | 2      | 2      | 3      | 3      |
| Russia                   | -    | -     | -     | -     | -      | -      | 826    | 1,182  | 1,389  | 1,629  |
| Serbia                   | 0    | 0     | 0     | 1     | 1      | 2      | 3      | 5      | 9      | 11     |
| Singapore                | -    | -     | -     | -     | 25     | 37     | 52     | 94     | 138    | 204    |
| Slovakia                 | -    | -     | -     | -     | -      | -      | -      | -      | -      | -      |
| South Africa             | -    | -     | -     | -     | -      | -      | -      | -      | -      | -      |
| South Korea              | -    | -     | -     | -     | -      | -      | -      | -      | -      | -      |
| Spain                    | -    | -     | -     | 76    | 105    | 155    | 177    | 241    | 291    | 332    |
| Sweden                   | 7    | 22    | 60    | 126   | 208    | 320    | 534    | 344    | 417    | 468    |
| Switzerland              | -    | -     | -     | -     | -      | -      | -      | -      | -      | -      |
| Taiwan                   | -    | -     | -     | -     | -      | -      | -      | -      | -      | -      |
| Thailand                 | -    | -     | 1     | 2     | 3      | 3      | 3      | 4      | 4      | 6      |
| Ukraine                  | -    | -     | -     | -     | -      | -      | 18     | 37     | 67     | 88     |
| United Kingdom           | -    | 267   | 698   | 1,362 | 2,185  | 3,569  | 5,206  | 9,155  | 10,315 | 11,799 |
| United States of America | -    | 1,571 | 3,522 | 6,308 | 10,910 | 18,498 | 25,422 | 33,712 | 44,764 | 53,541 |

## Mobile share of total internet consumption (%)

|                          | 2010        | 2011        | 2012        | 2013        | 2014        | 2015        | 2016        | 2017        | 2018        | 2019        |
|--------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Argentina                | -           | -           | -           | -           | -           | -           | -           | -           | -           | -           |
| Australia                | -           | -           | -           | 35          | 54          | 60          | 63          | 66          | 68          | 70          |
| Austria                  | -           | -           | -           | -           | 43          | 45          | 47          | 50          | 53          | 55          |
| Belarus                  | -           | -           | -           | -           | -           | -           | -           | -           | -           | -           |
| Belgium                  | -           | -           | -           | -           | -           | 27          | 33          | 35          | 36          | 37          |
| Bosnia-Herzegovina       | -           | -           | -           | -           | -           | -           | -           | -           | -           | -           |
| Bulgaria                 | -           | -           | -           | -           | -           | 28          | 35          | 38          | 38          | 39          |
| Canada                   | -           | -           | 31          | 34          | 49          | 53          | 59          | 62          | 65          | 67          |
| China                    | -           | -           | 38          | 40          | 45          | 64          | 73          | 77          | 81          | 84          |
| Colombia                 | 3           | 5           | 8           | 10          | 21          | 44          | 58          | 70          | 74          | 77          |
| Czech Republic           | -           | -           | -           | -           | -           | -           | -           | -           | -           | -           |
| Denmark                  | 29          | 30          | 31          | 32          | 37          | 40          | 43          | 44          | 45          | 47          |
| Ecuador                  | -           | -           | -           | -           | -           | -           | 65          | 70          | 72          | 75          |
| Estonia                  | 10          | 15          | 23          | 33          | 38          | 39          | 42          | 44          | 47          | 49          |
| Finland                  | -           | -           | -           | -           | -           | 24          | 24          | 25          | 29          | 33          |
| France                   | 17          | 19          | 21          | 23          | 25          | 28          | 32          | 38          | 42          | 46          |
| Germany                  | 5           | 13          | 24          | 38          | 52          | 56          | 63          | 66          | 69          | 71          |
| Greece                   | -           | -           | -           | -           | -           | -           | 37          | -           | -           | -           |
| Hong Kong                | -           | -           | -           | -           | -           | -           | 63          | 64          | 64          | 64          |
| Hungary                  | -           | -           | -           | -           | -           | -           | -           | -           | -           | -           |
| India                    | 11          | 43          | 47          | 39          | 53          | 66          | 73          | 73          | 75          | 76          |
| Ireland                  | -           | -           | -           | -           | -           | -           | -           | -           | -           | -           |
| Israel                   | -           | -           | -           | -           | -           | -           | -           | -           | -           | -           |
| Italy                    | -           | -           | -           | -           | 63          | 70          | 75          | 78          | 83          | 85          |
| Japan                    | -           | 38          | 40          | 43          | 40          | 42          | 46          | 51          | 54          | 60          |
| Latvia                   | -           | -           | -           | -           | 18          | 21          | 21          | 30          | 61          | 65          |
| Lithuania                | -           | -           | 5           | 6           | 23          | 28          | 38          | 49          | 50          | 53          |
| Malaysia                 | -           | -           | -           | -           | -           | -           | -           | -           | -           | -           |
| Mexico                   | -           | -           | -           | -           | -           | -           | -           | -           | -           | -           |
| Netherlands              | -           | -           | 18          | 21          | 26          | 29          | 31          | 38          | 43          | 48          |
| New Zealand              | -           | -           | -           | -           | -           | -           | -           | -           | -           | -           |
| Norway                   | -           | -           | -           | -           | -           | -           | -           | -           | -           | -           |
| Pakistan                 | -           | -           | -           | -           | -           | -           | -           | -           | -           | -           |
| Peru                     | -           | -           | -           | -           | -           | -           | -           | -           | -           | -           |
| Philippines              | -           | -           | -           | -           | -           | -           | -           | -           | -           | -           |
| Poland                   | -           | -           | -           | -           | -           | -           | 31          | 32          | 35          | 43          |
| Portugal                 | -           | -           | -           | -           | -           | -           | -           | -           | -           | -           |
| Romania                  | -           | -           | -           | -           | 51          | 55          | 54          | 56          | 56          | 57          |
| Russia                   | -           | -           | -           | -           | -           | 42          | 44          | 43          | 49          | 54          |
| Serbia                   | -           | -           | -           | -           | -           | -           | -           | -           | -           | -           |
| Singapore                | -           | -           | -           | -           | 30          | 31          | 33          | 34          | 39          | 43          |
| Slovakia                 | -           | -           | -           | -           | -           | -           | -           | -           | -           | -           |
| South Africa             | -           | -           | -           | -           | -           | -           | -           | -           | -           | -           |
| South Korea              | -           | -           | -           | -           | -           | -           | -           | -           | -           | -           |
| Spain                    | -           | -           | -           | -           | -           | -           | 80          | 81          | 81          | 81          |
| Sweden                   | -           | -           | -           | -           | 41          | 44          | 48          | 53          | 58          | 63          |
| Switzerland              | -           | -           | -           | -           | -           | 52          | 52          | 52          | 52          | 52          |
| Taiwan                   | -           | -           | -           | -           | -           | 40          | 41          | 44          | 48          | 51          |
| Thailand                 | -           | -           | -           | -           | 44          | 50          | 40          | 55          | 60          | 65          |
| Ukraine                  | -           | -           | -           | -           | -           | -           | -           | -           | -           | -           |
| United Kingdom           | -           | -           | 14          | 30          | 42          | 47          | 49          | 57          | 64          | 68          |
| United States of America | 36          | 53          | 47          | 52          | 57          | 69          | 72          | 77          | 80          | 84          |
| <b>Average</b>           | <b>20.2</b> | <b>36.2</b> | <b>37.3</b> | <b>39.5</b> | <b>46.6</b> | <b>58.6</b> | <b>65.0</b> | <b>69.6</b> | <b>73.0</b> | <b>76.1</b> |



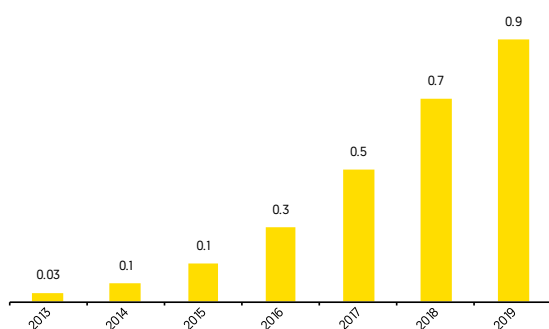
# Country entries

# Argentina

|                                                        | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018    | 2019    |
|--------------------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|
| Smartphone penetration [%]                             | 6.2    | 7.1    | 13.0   | 19.0   | 30.8   | 38.9   | 60.4   | 66.7   | 72.6    | 78.4    |
| Tablet penetration [%]                                 | -      | -      | 0.8    | 1.8    | 3.1    | 4.7    | 5.7    | 6.4    | 7.0     | 7.2     |
| Internet - Average daily minutes of consumption        | 144    | 143    | 146    | 141    | 148    | 128    | 131    | 135    | 137     | 139     |
| Mobile internet - Average daily minutes of consumption | -      | -      | -      | -      | -      | -      | -      | -      | -       | -       |
| % of average daily internet consumption via mobile     | -      | -      | -      | -      | -      | -      | -      | -      | -       | -       |
| Total advertising expenditure [ARS m]                  | 12,340 | 16,239 | 20,421 | 26,824 | 37,469 | 56,238 | 77,818 | 92,603 | 106,493 | 117,143 |
| % of programmatic adspend going to mobile              | -      | -      | -      | -      | -      | -      | -      | -      | -       | -       |
| % of Total adspend delivered via mobile                | -      | -      | -      | 0.03   | 0.1    | 0.1    | 0.3    | 0.5    | 0.7     | 0.9     |
| Adspend delivered via mobile devices [ARS m]           | -      | -      | -      | 8      | 24     | 74     | 200    | 421    | 745     | 1,058   |
| <i>Mobile display</i>                                  | -      | -      | -      | -      | 11     | 34     | 92     | 196    | 350     | 502     |
| <i>Mobile classified</i>                               | -      | -      | -      | -      | 4      | 12     | 30     | 58     | 91      | 116     |
| <i>Mobile search</i>                                   | -      | -      | -      | -      | 9      | 28     | 78     | 167    | 304     | 439     |

Sources: Kantar/Ibope - TGI Argentina (Jan/Dec 2015), emarketer, Zenith

## Mobile as % of total adspend



The main mobile service providers in Argentina are Movistar [Telefónica], Claro [América Móvil] and Personal [Telecom], and mobile phone penetration among individuals is 90%. Because smartphone ownership is growing, more and more companies are focusing their marketing strategies on mobile. Currently, digital advertising still means a relatively small investment, but this only makes it more attractive to advertisers, particularly considering the added benefit of being able to analyse information based on the search and data traffic generated. There are now more possibilities for segmenting not only by app type, but by location visited (bars, schools, transshipment areas etc).

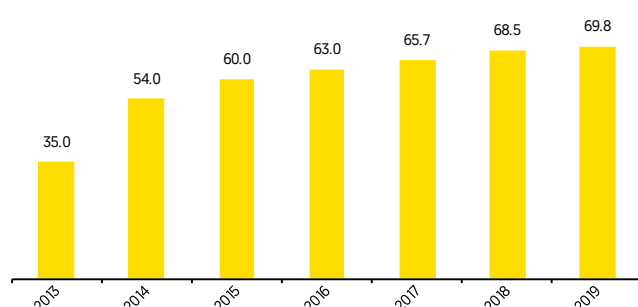
The most common types of advertising on mobile devices are standard, interstitial, video (instream, in read), vertical video, home event and indoor event. Views via mobile are increasing; mobile devices are playing an ever more important role in the purchasing process, and more and more they are used to view content that was previously exclusive to television.

# Australia

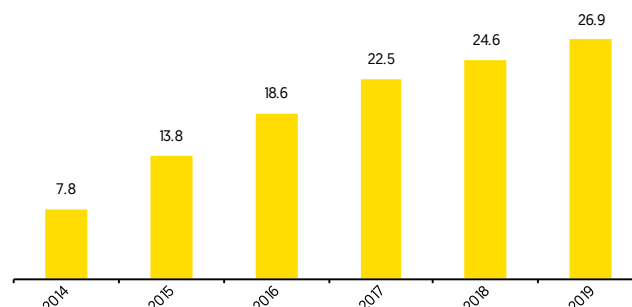
|                                                        | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   | 2019   |
|--------------------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Smartphone penetration (%)                             | 32.0   | 48.0   | 55.0   | 60.5   | 65.9   | 71.9   | 79.9   | 86.0   | 89.0   | 90.0   |
| Tablet penetration (%)                                 | 3.9    | 13.0   | 15.3   | 33.0   | 41.0   | 45.1   | 48.2   | 65.7   | 69.0   | 71.0   |
| Internet - Average daily minutes of consumption        | 110    | 120    | 137    | 145    | 153    | 159    | 166    | 170    | 179    | 187    |
| Mobile internet - Average daily minutes of consumption | -      | -      | -      | 51     | 83     | 96     | 105    | 112    | 122    | 131    |
| % of average daily internet consumption via mobile     | -      | -      | -      | 35.0   | 54.0   | 60.0   | 63.0   | 65.7   | 68.5   | 69.8   |
| Total advertising expenditure (A\$ m)                  | 12,434 | 12,378 | 12,376 | 12,662 | 12,946 | 14,155 | 15,257 | 15,694 | 16,223 | 16,789 |
| % of programmatic adspend going to mobile              | -      | -      | 1.0    | 1.2    | 1.8    | 1.6    | 3.0    | 6.0    | 11.6   | 18.0   |
| % of Total adspend delivered via mobile                | -      | -      | -      | -      | 7.8    | 13.8   | 18.6   | 22.5   | 24.6   | 26.9   |
| Adspend delivered via mobile devices (A\$ m)           | -      | -      | -      | -      | 1,012  | 1,959  | 2,837  | 3,526  | 3,989  | 4,519  |
| Mobile display                                         | -      | -      | -      | -      | 410    | 827    | 1,283  | 1,524  | 1,820  | 2,174  |
| Mobile classified                                      | -      | -      | -      | -      | 167    | 443    | 636    | 707    | 804    | 920    |
| Mobile search                                          | -      | -      | -      | -      | 435    | 690    | 918    | 1,295  | 1,365  | 1,424  |

Source: Roy Morgan JUNE 17 (July 16 - June 17), CEASA 2017, Zenith

Mobile as % of daily internet consumption



Mobile as % of total adspend



Mobile advertising expenditure in Australia grew by 45% in 2016. To provide context, total online advertising expenditure, which includes all platforms and formats, grew only 23% over the same period.

Australia continues to be one of the leading smartphone markets globally, with penetration at 80% in 2016, expected to increase to 90% in 2019.

Nearly everyone under 50 uses mobile to go online (90%); in the older demographics the percentage is lower: for ages 50-64 it is 61% and for 65+ 33%.

Time spent with mobile internet increased twofold between 2013 [50.9mins] and 2016 [104.7 mins] and is forecast to rise to 130.9 mins in 2019. Mobile internet time has replaced other media as the lead source of news and entertainment as desktop, TV, newspapers and magazine time spent has declined. The proliferation of larger free data limits, better smartphone devices and popularity of apps has driven the increase in mobile internet consumption.

Smartphone usage will grow further, driven by improvements in the available technology, such as: The Internet of Things - which will ensure integration of smartphones into everyday life and with other objects e.g. smartphones controlling Nest thermostats.

Voice assistants - as Siri and Google Assistant grow smarter and better understand natural language and context, search and content discovery will be driven by voice rather than by typed keywords.

VR/AR - the battle between Facebook and Google to become the more popular VR platform on phones will drive down prices and make headsets more affordable. This will also move mobile VR out of its infancy and possibly open it up to mass adoption, which will create numerous opportunities for branded content, education dissemination and in-stream advertising.

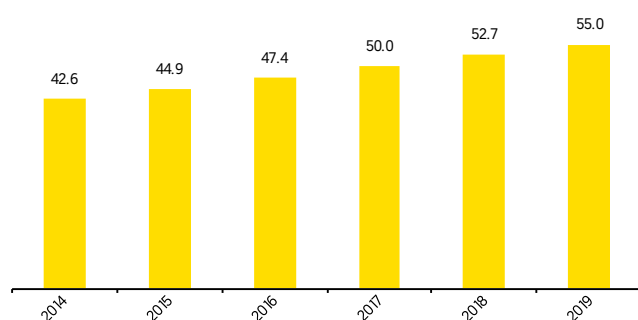
Payments - currently there has been only limited rollout of Apple Pay and Samsung Pay in this market while banks other than ANZ negotiate with Apple Pay for access to

its technology. Australia has yet to catch up with some other Asian countries where mobile payments are more commonplace through SMS, tap and pay, NFC or via messaging apps.

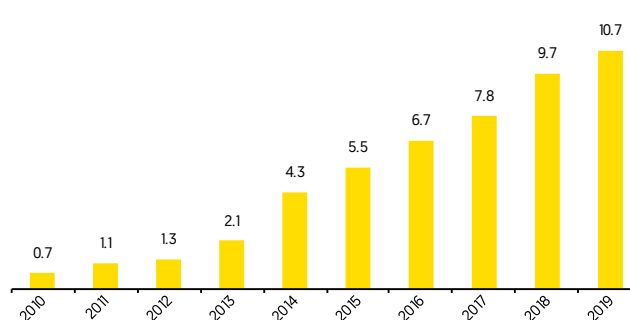
|                                                        | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  | 2019  |
|--------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Smartphone penetration [%]                             | 20.0  | 26.0  | 37.0  | 48.1  | 59.2  | 65.5  | 71.1  | 76.1  | 80.6  | 83.9  |
| Tablet penetration [%]                                 | 2.0   | 5.0   | 10.0  | 20.0  | 36.9  | 44.2  | 50.5  | 55.6  | 60.0  | 63.6  |
| Internet - Average daily minutes of consumption        | -     | -     | -     | -     | 188   | 197   | 205   | 214   | 217   | 220   |
| Mobile internet - Average daily minutes of consumption | -     | -     | -     | -     | 80    | 89    | 97    | 107   | 114   | 121   |
| % of average daily internet consumption via mobile     | -     | -     | -     | -     | 42.6  | 44.9  | 47.4  | 50.0  | 52.7  | 55.0  |
| Total advertising expenditure [€ m]                    | 1,688 | 1,810 | 1,789 | 1,793 | 1,786 | 1,801 | 1,814 | 1,851 | 1,886 | 1,920 |
| % of programmatic adspend going to mobile              | -     | -     | 2.0   | 5.0   | 15.0  | 25.0  | 35.0  | 40.0  | 45.0  | 50.0  |
| % of Total adspend delivered via mobile                | 0.7   | 1.1   | 1.3   | 2.1   | 4.3   | 5.5   | 6.7   | 7.8   | 9.7   | 10.7  |
| Adspend delivered via mobile devices [€ m]             | 11    | 20    | 24    | 38    | 77    | 98    | 121   | 144   | 183   | 206   |
| <i>Mobile display</i>                                  | 5     | 6     | 7     | 8     | 27    | 41    | 57    | 76    | 93    | 111   |
| <i>Mobile classified</i>                               | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| <i>Mobile search</i>                                   | 6     | 14    | 17    | 30    | 50    | 58    | 64    | 68    | 90    | 95    |

Source: Media-Analyse/Media Server/Zenith

*Mobile as % of daily internet consumption*



*Mobile as % of total adspend*



In Austria, there are three main mobile service providers – A1, T-Mobile and Hutchison 3. Both men and women use mobile devices almost equally, while 71% of mobile device users are between 14 and 49 years of age. The higher the social status, the higher the usage of mobile devices: 78% of people in social class ABC1 use mobile devices regularly. According to Media-Analyse, usage also skews towards students and people who are working or well educated. About 74% of internet traffic is now via mobile devices.

In terms of advertising, mobile devices are most commonly used for Facebook ads, branding campaigns [understitial, medium rectangle] and CPC campaigns [interstitial, MMA-banner].

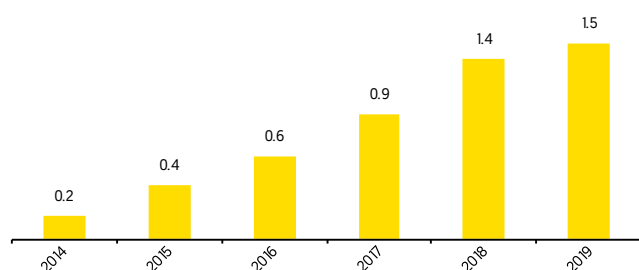
New trends in Austria include hyperlocal targeting and real data targeting supplied by the mobile service providers. Within the next few years, we expect a boost to beacon/ near field communication, especially in retail. We will also see more of a focus on 'mobile first' thinking by digital creatives. Videos should be produced as verticals, banners should be always optimized for mobile usage and voice search requests will increase dramatically.

# Belarus

|                                                        | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|--------------------------------------------------------|------|------|------|------|------|------|------|------|------|------|
| Smartphone penetration (%)                             | -    | -    | -    | -    | -    | 54.4 | 57.0 | 58.5 | 60.0 | 62.0 |
| Tablet penetration (%)                                 | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Internet - Average daily minutes of consumption        | -    | -    | -    | -    | 327  | 319  | 329  | 338  | 349  | 355  |
| Mobile internet - Average daily minutes of consumption | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| % of average daily internet consumption via mobile     | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Total advertising expenditure (US\$ m)                 | 98   | 70   | 81   | 108  | 116  | 83   | 91   | 109  | 125  | 138  |
| % of programmatic adspend going to mobile              | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| % of Total adspend delivered via mobile                | -    | -    | -    | -    | 0.2  | 0.4  | 0.6  | 0.9  | 1.4  | 1.5  |
| Adspend delivered via mobile devices (US\$ m)          | -    | -    | -    | -    | 0.2  | 0.3  | 0.6  | 1.0  | 1.7  | 2.0  |
| <i>Mobile display</i>                                  | -    | -    | -    | -    | 0.2  | 0.3  | 0.6  | 1.0  | 1.7  | 2.0  |
| <i>Mobile classified</i>                               | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| <i>Mobile search</i>                                   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |

Source: Zenith, Ministry of Communications and Informatization of Belarus, Gemius, WebExpert

## Mobile as % of total adspend



Smartphone and tablet usage is highly skewed towards the young (aged 15-34) and urban population, but usage is rising rapidly among all demographic groups.

Big advertisers commonly use full-screen formats to communicate with consumers, though performance campaigns focus on banners in apps.

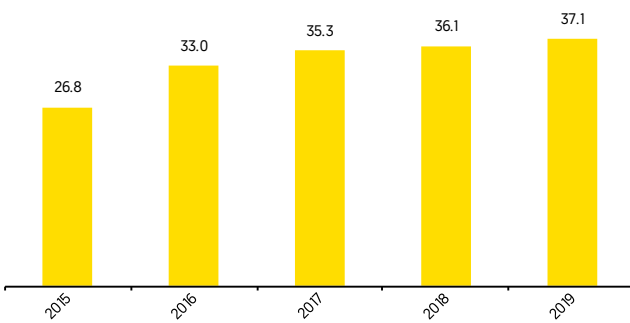
The amount of time people spend accessing the internet on their phones is growing rapidly, but most people who do so use desktop internet as well. Only a small proportion of internet users are mobile-only.

# Belgium

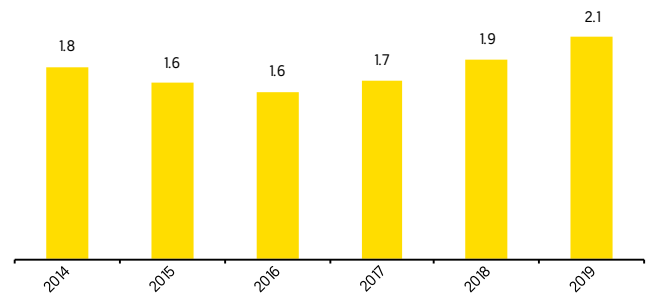
|                                                        | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  | 2019  |
|--------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Smartphone penetration (%)                             | 11.6  | 14.6  | 18.5  | 39.2  | 41.1  | 45.6  | 78.0  | 85.0  | 87.0  | 89.0  |
| Tablet penetration (%)                                 | -     | -     | -     | 26.8  | 27.5  | 32.2  | 44.0  | 50.0  | 51.0  | 53.0  |
| Internet - Average daily minutes of consumption        | -     | -     | -     | -     | -     | 205   | 218   | 204   | 208   | 210   |
| Mobile internet - Average daily minutes of consumption | -     | -     | -     | -     | -     | 55    | 72    | 72    | 75    | 78    |
| % of average daily internet consumption via mobile     | -     | -     | -     | -     | -     | 26.8  | 33.0  | 35.3  | 36.1  | 37.1  |
| Total advertising expenditure (€m)                     | 3,467 | 3,588 | 3,609 | 3,700 | 3,764 | 3,824 | 4,070 | 4,090 | 4,162 | 4,248 |
| % of programmatic adspend going to mobile              | -     | -     | -     | -     | -     | -     | 20.0  | 26.0  | 30.0  | 35.0  |
| % of Total adspend delivered via mobile                | -     | -     | -     | -     | 1.8   | 1.6   | 1.6   | 1.7   | 1.9   | 2.1   |
| Adspend delivered via mobile devices (€m)              | -     | -     | -     | -     | 68    | 63    | 64    | 69    | 78    | 88    |
| <i>Mobile display</i>                                  | -     | -     | -     | -     | 68    | 63    | 64    | 69    | 78    | 88    |
| <i>Mobile classified</i>                               | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| <i>Mobile search</i>                                   | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |

Source: Cym PMP, GWI

*Mobile as % of daily internet consumption*



*Mobile as % of total adspend*



The principal mobile providers in the Belgian market are Proximus [60.9% share], Orange [26.7%], Telenet [3.7%] and Base [8.6%].

The ad formats commonly used on mobile are very similar to those used on desktop: programmatic display, retargeting, online video, non-skippable formats, YouTube pre-rolls, in-read [Teads], Facebook and Instagram.

The share of mobile usage as a proportion of total digital varies between 20% and 35% depending on age group, according to Global Web Index. On Facebook, it can go as high as 80%.

# Bosnia & Herzegovina

|                                                        | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|--------------------------------------------------------|------|------|------|------|------|------|------|------|------|------|
| Smartphone penetration [%]                             | 11.0 | 13.9 | 16.8 | 18.5 | 22.0 | 40.0 | 45.0 | 50.0 | 60.0 | 65.0 |
| Tablet penetration [%]                                 | -    | -    | 0.5  | 1.0  | 2.0  | 3.0  | 4.5  | 6.8  | 10.1 | 12.2 |
| Internet - Average daily minutes of consumption        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Mobile internet - Average daily minutes of consumption | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| % of average daily internet consumption via mobile     | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Total advertising expenditure [BAM m]                  | 634  | 723  | 814  | 796  | 826  | 816  | 681  | 658  | 694  | 700  |
| % of programmatic adspend going to mobile              | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| % of Total adspend delivered via mobile                | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Adspend delivered via mobile devices [BAM m]           | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| <i>Mobile display</i>                                  | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| <i>Mobile classified</i>                               | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| <i>Mobile search</i>                                   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |

Source: GfK BH 2006, Zenith estimates

The main mobile providers are BH Mobile (owned by BH Telekom), m:tel (owned by Telekom Srpske) and HT Eronet (owned by HT).

Total penetration of mobile devices is about 94%, but the level of smart device penetration remains low. In 2015, 27.6% of citizens older than 15 years of age owned a smartphone. Android is the most popular system; Samsung phones account for about 42% of all appliances. Mobile penetration is higher among urban and younger populations. Of those in the 15-24 age group, 78.9% have smart devices v. 6.9% for those in the 65+ age group. For many younger users, using social media to connect and communicate is core to the mobile experience and second-screening is entrenched.

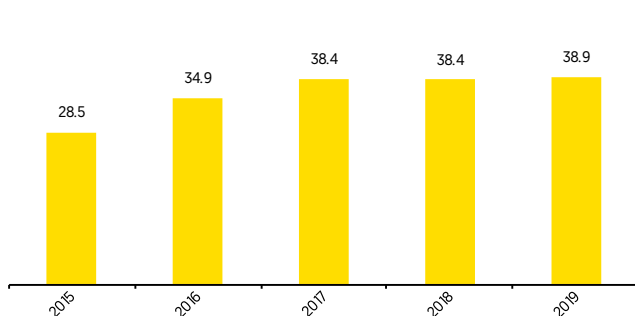
Display is still the dominant type of mobile advertising, especially on local web sites. Smartphone penetration being relatively low, and flat-rate data plans being relatively uncommon, there is much less demand for advertising formats like online videos, animations and interactive.

As smartphone penetration continues to increase, we can expect that mobile advertising and opportunities to develop will grow, assuming mobile operators give customers access to reliable data packages.

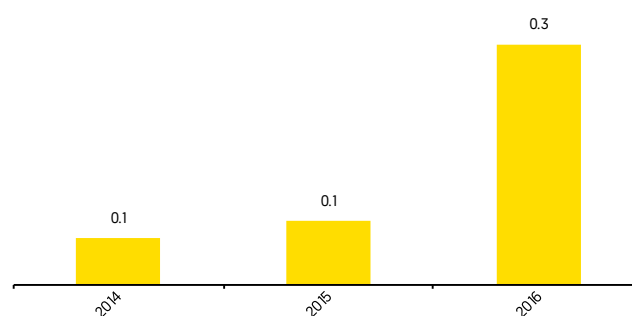
|                                                        | 2010 | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  | 2019  |
|--------------------------------------------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Smartphone penetration [%]                             | -    | -     | -     | 28.0  | 33.0  | 48.0  | 53.0  | 58.0  | 62.0  | 64.2  |
| Tablet penetration [%]                                 | -    | -     | -     | 8.0   | 15.0  | 22.0  | 26.0  | 29.0  | 32.0  | 34.5  |
| Internet - Average daily minutes of consumption        | 772  | 732   | 733   | 623   | 525   | 432   | 430   | 380   | 430   | 450   |
| Mobile internet - Average daily minutes of consumption | -    | -     | -     | -     | -     | 123   | 150   | 146   | 165   | 175   |
| % of average daily internet consumption via mobile     | -    | -     | -     | -     | -     | 28.5  | 34.9  | 38.4  | 38.4  | 38.9  |
| Total advertising expenditure [BGN m]                  | 999  | 1,041 | 1,127 | 1,257 | 1,346 | 1,401 | 1,564 | 1,640 | 1,739 | 1,729 |
| % of programmatic adspend going to mobile              | -    | -     | -     | -     | -     | -     | -     | 52.0  | 60.0  | 65.0  |
| % of Total adspend delivered via mobile                | -    | -     | -     | -     | 0.1   | 0.1   | 0.3   | -     | -     | -     |
| Adspend delivered via mobile devices [BGN m]           | -    | -     | -     | -     | 1     | 1     | 4     | -     | -     | -     |
| <i>Mobile display</i>                                  | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| <i>Mobile classified</i>                               | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| <i>Mobile search</i>                                   | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     |

Source: Gemius, Consumer barometer, GARB, Piero, Zenith, iAB Bulgaria

*Mobile as % of daily internet consumption*



*Mobile as % of total adspend*



Mobile devices are becoming more affordable and they are established as a necessity for our everyday lifestyle. In addition, mobile internet is becoming cheaper thanks to EU regulations and local mobile service providers' introduction of accessible 4G mobile internet packages. Because of this, we are witnessing an increasing share of mobile penetration and traffic, which is also a sign that mobile is cannibalizing desktop's traffic. Most Bulgarian websites have responsive design because of the UX and SEO advantages.

The local mobile service providers are M-Tel, Telenor Bulgaria and Vivacom.

Young urban people are the core mobile users. Smartphones are the preferred mobile device, used by 80%

of users. Most mobile devices available for advertising are with Android OS – 85%.

In the last couple of years, programmatic advertising has been gaining more and more popularity, which will increase overall channel investment. More than half of all programmatic impressions are on mobile devices. We are expecting that mobile impression/ad spend share will increase in the next couple of years.

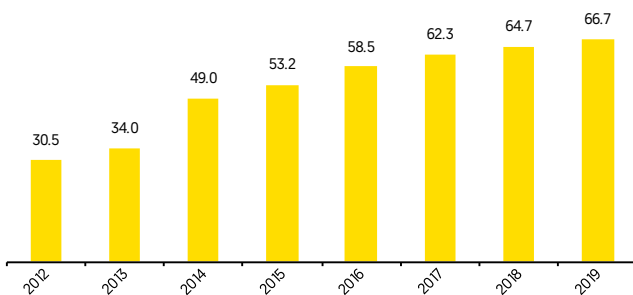
In terms of mobile ad formats, native ads and shoppable content (e.g. Facebook Collection format and Instagram product tag) will diversify the ad engagement approaches with their non-aggressive and useful concepts for the mobile environment.

# Canada

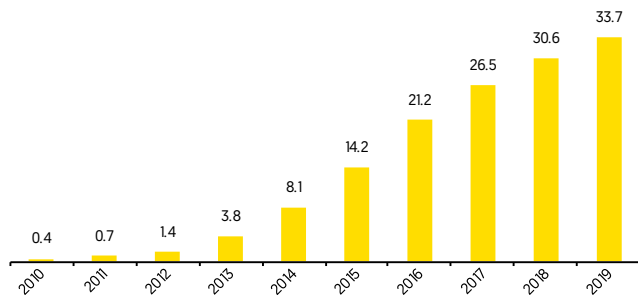
|                                                        | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   | 2019   |
|--------------------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Smartphone penetration (%)                             | 17.7   | 24.3   | 34.5   | 39.4   | 50.2   | 55.7   | 59.9   | 62.8   | 64.6   | 65.6   |
| Tablet penetration (%)                                 | -      | 6.0    | 15.0   | 22.5   | 42.0   | 48.2   | 52.0   | 55.6   | 57.4   | 58.4   |
| Internet - Average daily minutes of consumption        | 88     | 93     | 121    | 137    | 133    | 139    | 144    | 152    | 160    | 168    |
| Mobile internet - Average daily minutes of consumption | -      | -      | 37     | 47     | 65     | 74     | 84     | 94     | 104    | 112    |
| % of average daily internet consumption via mobile     | -      | -      | 31     | 34     | 49     | 53     | 59     | 62     | 65     | 67     |
| Total advertising expenditure (C\$ m)                  | 10,391 | 10,851 | 11,219 | 11,159 | 11,137 | 11,415 | 12,013 | 12,576 | 13,171 | 13,636 |
| % of programmatic adspend going to mobile              | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| % of Total adspend delivered via mobile                | 0.4    | 0.7    | 1.4    | 3.8    | 8.1    | 14.2   | 21.2   | 26.5   | 30.6   | 33.7   |
| Adspend delivered via mobile devices (C\$ m)           | 47     | 81     | 160    | 427    | 903    | 1,620  | 2,542  | 3,330  | 4,029  | 4,593  |
| Mobile display                                         | 19     | 32     | 64     | 170    | 359    | 610    | 694    | 793    | 888    | 1,012  |
| Mobile video                                           | 3      | 6      | 11     | 29     | 61     | 104    | 123    | 145    | 168    | 192    |
| Mobile classified                                      | 1      | 1      | 2      | 5      | 10     | 17     | 21     | 26     | 32     | 36     |
| Mobile search                                          | 24     | 41     | 82     | 218    | 461    | 784    | 896    | 1,032  | 1,171  | 1,335  |
| Mobile other/uncategorized                             | 1      | 1      | 2      | 6      | 12     | 105    | 809    | 1,333  | 1,770  | 2,018  |

Source: eMarketer Digital Atlas, Zenith

Mobile as % of daily internet consumption



Mobile as % of total adspend



There are about ten mobile wireless service operators in Canada. However, according to CRTC's Media Monitoring report, approximately 90% of revenues are shared by the top three national providers: Rogers, Telus, and Bell; in 2014, Rogers held a 35% market share, followed by Bell [29%], and Telus [28%].

The 'Big Three' have subsidiaries/brands allowing them to differentiate their offerings to reach broader market segments.

Rogers: Rogers Wireless, Fido, Chatr

Telus: Telus Mobility, Koodo Mobile, Public Mobile

Bell: Bell Mobility, Virgin Mobile, MTS Mobility

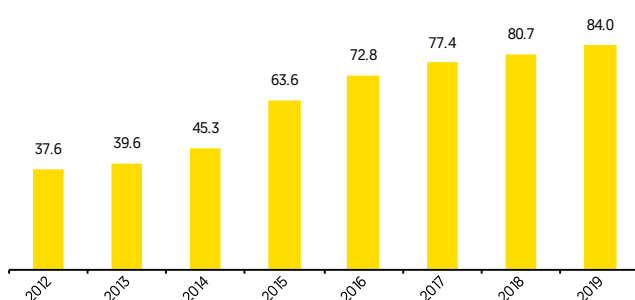
As mobile advertising matures, the growth in adspend we are seeing right now will slow down. However, with faster internet and decreasing costs of data, it is expected that mobile video will enjoy double digit growth until 2020. Not every format in mobile is enjoying exponential growth - SMS/MMS advertising is actually seeing a decrease in investment. As a whole, mobile advertising is forecast to reach C\$4.6 billion by 2019.

With the advancement of wireless technology, in both hardware and software, the sky is the limit for mobile advertising. And because mobile devices are on you almost all the time, it could become the most important touchpoint for advertisers.

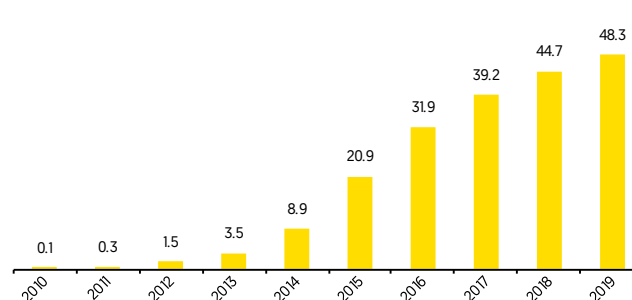
|                                                        | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    | 2019    |
|--------------------------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Smartphone penetration (%)                             | -       | -       | 23.9    | 51.0    | 58.4    | 69.9    | 79.8    | 85.4    | 89.7    | 92.3    |
| Tablet penetration (%)                                 | -       | -       | 0.7     | 1.6     | 2.5     | 3.1     | 3.9     | 4.8     | 5.8     | 6.6     |
| Internet - Average daily minutes of consumption        | -       | 82      | 87      | 116     | 143     | 165     | 186     | 202     | 209     | 214     |
| Mobile internet - Average daily minutes of consumption | -       | -       | 32.7    | 46      | 65      | 105     | 136     | 156     | 169     | 180     |
| % of average daily internet consumption via mobile     | -       | -       | 37.6    | 39.6    | 45.3    | 63.6    | 72.8    | 77.4    | 80.7    | 84.0    |
| Total advertising expenditure (RMB m)                  | 252,970 | 297,805 | 335,234 | 380,015 | 419,967 | 458,331 | 498,080 | 532,263 | 565,182 | 598,742 |
| % of programmatic adspend going to mobile              | -       | -       | -       | -       | -       | -       | -       | -       | -       | -       |
| % of Total adspend delivered via mobile                | 0.1     | 0.3     | 1.5     | 3.5     | 8.9     | 20.9    | 31.9    | 39.2    | 44.7    | 48.3    |
| Adspend delivered via mobile devices (RMB m)           | 284     | 1,026   | 5,176   | 13,307  | 37,364  | 95,665  | 159,117 | 208,760 | 252,464 | 288,974 |
| Mobile display                                         | -       | -       | -       | -       | -       | -       | -       | -       | -       | -       |
| Mobile classified                                      | -       | -       | -       | -       | -       | -       | -       | -       | -       | -       |
| Mobile search                                          | -       | -       | -       | -       | -       | -       | -       | -       | -       | -       |

Source: Zenith

Mobile as % of daily internet consumption



Mobile as % of total adspend



Baidu, Alibaba Group and Tencent [BAT] are the three main mobile services providers in China, as 15 of the top popular 20 mobile apps belong to them, according to iResearch Mobile Tracking. Their services include communication, entertainment, payment and maps.

BAT keeps extending its product lines to win more customers and occupy more market share. The other five top 20 popular mobile service providers are Sogou Input, Sina, 360, WiFi and Kugou, which focus on input editor, social, device safety, WiFi links and music. In 2017, a China Marketing & Media Survey [CMMS] reported that the penetration of smartphones and tablets enjoyed double-digit growth in 2016, reaching 80% and 4% respectively. Even in lower tiers and country regions, smartphone penetration reached 66% in 2016. Smartphone and tablet penetration is highest in the Tier 1 cities [85% and 7% respectively]. Overall, people spent an average of 136 minutes a day on mobile devices.

Ad investment on mobile devices had reached about 159 billion RMB at the end of 2016, a 66% increase on 2015, accounting for 32% of all media spend [more than desktop].

Feed ads rose 115% in 2016, now accounting for 11% of all internet ads.

Zhihu launched online Q&A platform Zhihu Live in April 2016, sparking the birth of the knowledge purchase era. There have been around 1,500 sessions since it launched, with the repurchase rate reaching 34%. Fenda, another knowledge-sharing app, has attracted more than 1 million users, creating 18 million RMB deals one year after its release. Weibo also followed the trend, opening 'Weibo Q&A', allowing users to ask questions of experts and KOLs.

AR [Augmented Reality] and VR [Virtual Reality] are now universal in mobile applications. Tencent launched AR red packets in the Chinese Spring Festival, which followed the success of Nintendo's game Pokemon Go. Taobao has popularized VR tech, integrating it into its new purchase format Buy+ in July, allowing consumers to 'try on' clothes during online shopping. Games are also popular: Onmyoji, developed by Netease, and King of Glory, developed by Tencent, both debuted in 2016 and were instant hits. Both games had attracted more than 10 million daily average users [DAU] just one month after launch.

Innovative technology is also applied in video streaming. Several live streaming apps, such as Miaopai and Xiaokaxiu, became popular in 2015. However, attention spans are dwindling and fewer people are happy to concentrate for even two or three minutes on one video; nevertheless, they are not satisfied simply with photos. So these apps have been superseded by short video apps such as Kuaishou, a successful short video recording platform where ordinary people can release 57-second videos. It has registered 500 million users to date and had more than 50 million DAU

at the end of April 2017. What's more, the companies also developed algorithms into these short video apps, helping users edit videos like professional film editors. VUE and Douyin are other good examples of this type of service.

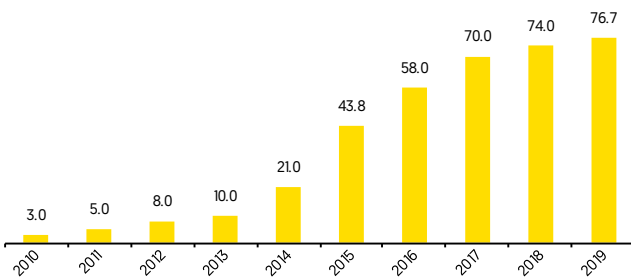
Smartphone penetration is expected to continue to grow quickly, although tablet penetration is slowing, possibly because the bigger, better phones available have rendered them unnecessary to many.

# Colombia

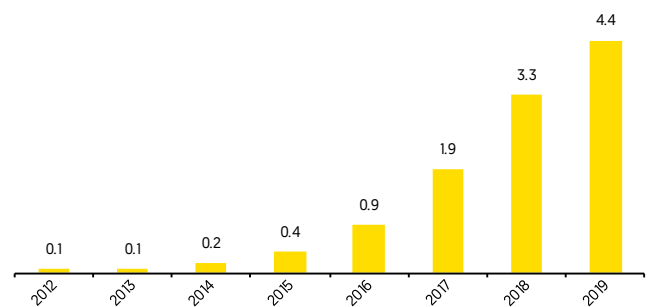
|                                                        | 2010      | 2011      | 2012      | 2013      | 2014      | 2015      | 2016      | 2017      | 2018      | 2019      |
|--------------------------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Smartphone penetration (%)                             | 5.6       | 11.6      | 14.5      | 24.8      | 35.0      | 37.0      | 40.3      | 46.3      | 53.3      | 61.3      |
| Tablet penetration (%)                                 | -         | 0.8       | 3.2       | 11.3      | 19.4      | 25.0      | 26.3      | 27.6      | 28.9      | 30.4      |
| Internet - Average daily minutes of consumption        | 25        | 30        | 40        | 60        | 75        | 80        | 85        | 90        | 120       | 150       |
| Mobile internet - Average daily minutes of consumption | 1         | 2         | 3         | 6         | 16        | 35        | 49        | 63        | 89        | 115       |
| % of average daily internet consumption via mobile     | 3.0       | 5.0       | 8.0       | 10.0      | 21.0      | 43.8      | 58.0      | 70.0      | 74.0      | 76.7      |
| Total advertising expenditure [COP m]                  | 5,380,422 | 6,576,813 | 6,361,744 | 6,368,773 | 5,718,799 | 5,127,545 | 5,134,585 | 5,073,902 | 4,958,758 | 4,919,576 |
| % of programmatic adspend going to mobile              | -         | -         | -         | -         | 1.0       | 22.6      | 25.2      | 25.0      | 18.8      | 20.0      |
| % of Total adspend delivered via mobile                | 0.003     | 0.02      | 0.1       | 0.1       | 0.2       | 0.4       | 0.9       | 1.9       | 3.3       | 4.4       |
| Adspend delivered via mobile devices [COP m]           | 139       | 1,163     | 4,058     | 4,625     | 10,056    | 19,506    | 46,390    | 98,655    | 165,332   | 214,932   |
| <i>Mobile display</i>                                  | -         | -         | 3,256     | 3,818     | 6,837     | 13,870    | 25,514    | 54,260    | 90,933    | 118,213   |
| <i>Mobile classified</i>                               | -         | -         | 601       | 293       | 372       | 871       | 9,278     | 19,731    | 33,066    | 42,986    |
| <i>Mobile search</i>                                   | -         | -         | 201       | 514       | 2,847     | 4,765     | 11,597    | 24,664    | 41,333    | 53,733    |

Source: TGI Colombia, Comscore, IAB Colombia, Zenith

*Mobile as % of daily internet consumption*



*Mobile as % of total adspend*



Claro, Movistar and Tigo are the main mobile service providers in Colombia. Mobile devices are most commonly used for the following types of advertising:

- Search
- Video
- Traditional banners
- Geo-reference rich media banners

Mobile complements offline activities, and more content is being produced in Colombia now thanks to the simplicity of using mobile.

New trends include CRM data and geo-reference for segmentation to create personalized communication.

Colombian people have quickly adopted mobile use into their habits, and mobile will be one of the main media in the future.

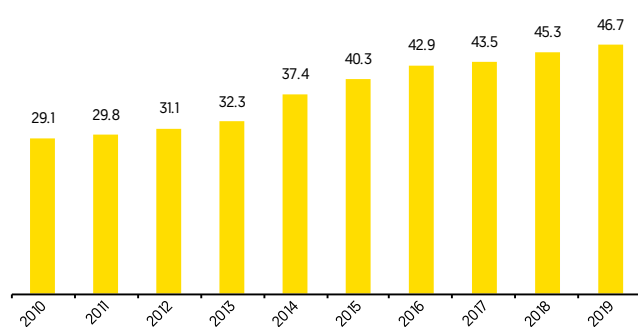
# Denmark

|                                                        | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   | 2019   |
|--------------------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Smartphone penetration [%]                             | 28.0   | 30.0   | 45.0   | 48.0   | 59.0   | 67.0   | 75.0   | 80.0   | 85.0   | 90.0   |
| Tablet penetration [%]                                 | -      | -      | -      | 47.0   | 55.0   | 60.0   | 62.0   | 63.0   | 70.0   | 75.0   |
| Internet - Average daily minutes of consumption        | 131    | 141    | 151    | 148    | 148    | 154    | 160    | 161    | 165    | 167    |
| Mobile internet - Average daily minutes of consumption | 38     | 42     | 47     | 48     | 55     | 62     | 69     | 70     | 75     | 78     |
| % of average daily internet consumption via mobile     | 29.1   | 29.8   | 31.1   | 32.3   | 37.4   | 40.3   | 42.9   | 43.5   | 45.3   | 46.7   |
| Total advertising expenditure [DKr m]                  | 12,415 | 13,085 | 12,706 | 12,561 | 12,736 | 13,191 | 13,730 | 14,544 | 15,302 | 15,479 |
| % of programmatic adspend going to mobile              | -      | -      | -      | 7.6    | 7.3    | 15.0   | 20.0   | 25.0   | 32.0   | 40.0   |
| % of Total adspend delivered via mobile                | -      | 0.2    | 0.3    | 0.6    | 1.0    | 1.3    | 1.8    | 2.4    | 3.1    | 4.0    |
| Adspend delivered via mobile devices [DKr m]           | -      | 30     | 39     | 78     | 122    | 176    | 244    | 343    | 475    | 619    |
| <i>Mobile display*</i>                                 | -      | 30     | 39     | 78     | 122    | 176    | 244    | 343    | 475    | 619    |
| <i>Mobile classified</i>                               | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| <i>Mobile search</i>                                   | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |

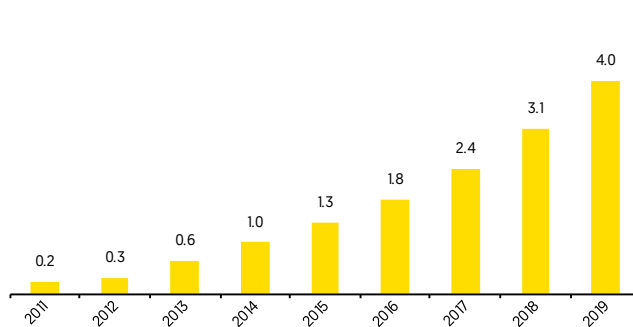
Source: Dansk Online, Zenith

\* includes classified

Mobile as % of daily internet consumption



Mobile as % of total adspend



The main mobile service providers in Denmark are: 3, Telia, Telenor, TDC, Tellmore, CBB and Call Me. Almost everybody uses mobile devices, but we see a greater affinity among young people. However, no particular demographic criteria are more obvious than others.

In Denmark, the type of advertising mobile devices are most commonly used for is display ads.

Mobile and tablet internet usage is growing at the slight expense of desktop internet usage. This development can be explained by the fact that smartphones and tablets are more dynamic devices, and are easier for consumers to use in the increasingly complex world we live in.

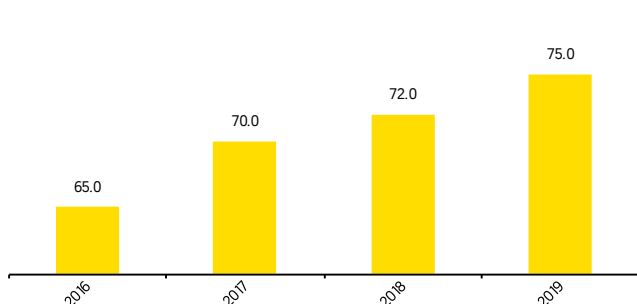
The new trends in mobile include Mobile Pay (mobile used as wallet) and mobile virtual reality. In the future, there will be a move from text to speech (voice search) and augmented experiences.

# Ecuador

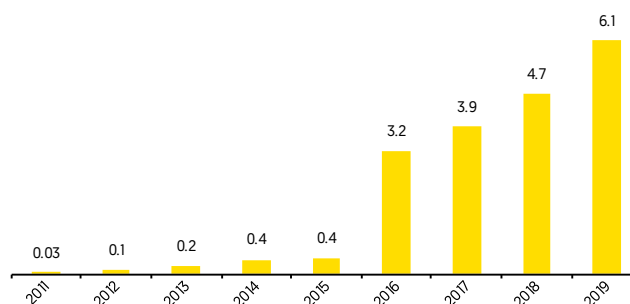
|                                                        | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|--------------------------------------------------------|------|------|------|------|------|------|------|------|------|------|
| Smartphone penetration (%)                             | -    | 8.4  | 15.4 | 25.2 | 39.0 | 45.0 | 50.0 | 55.3 | 65.8 | 73.2 |
| Tablet penetration (%)                                 | -    | 2.0  | 4.0  | 7.0  | 10.0 | 13.0 | 16.0 | 18.1 | 20.9 | 24.7 |
| Internet - Average daily minutes of consumption        | -    | -    | -    | -    | -    | -    | 152  | 161  | 173  | 185  |
| Mobile internet - Average daily minutes of consumption | -    | -    | -    | -    | -    | -    | 99   | 113  | 125  | 139  |
| % of average daily internet consumption via mobile     | -    | -    | -    | -    | -    | -    | 65.0 | 70.0 | 72.0 | 75.0 |
| Total advertising expenditure (US\$ m)                 | 368  | 455  | 410  | 422  | 450  | 422  | 338  | 325  | 320  | 320  |
| % of programmatic adspend going to mobile              | -    | -    | -    | -    | -    | -    | 40.0 | 55.0 | 70.0 | 85.0 |
| % of Total adspend delivered via mobile                | -    | 0.03 | 0.1  | 0.2  | 0.4  | 0.4  | 3.2  | 3.9  | 4.7  | 6.1  |
| Adspend delivered via mobile devices (US\$ m)          | -    | 0.1  | 0.4  | 0.9  | 1.7  | 1.7  | 10.9 | 12.6 | 15.1 | 19.6 |
| <i>Mobile display</i>                                  | -    | 0.02 | 0.1  | 0.7  | 1.1  | 1.1  | 8.5  | 9.8  | 11.8 | 15.3 |
| <i>Mobile classified</i>                               | -    | 0.02 | 0.1  | 0.1  | 0.1  | 0.1  | 0.1  | 0.2  | 0.2  | 0.3  |
| <i>Mobile search</i>                                   | -    | 0.1  | 0.2  | 0.1  | 0.5  | 0.5  | 2.3  | 2.6  | 3.1  | 4.1  |

Source: Zenith

Mobile as % of daily internet consumption



Mobile as % of total adspend



Claro is the principal mobile service, with 65% of the market. Other providers include Movistar and CNT, the latter being government-run. Overall, 52.1% of Ecuadorians currently have a smartphone. 80% of online search queries are made via smartphone.

Brands are developing their owned/branded apps, apps that can be integrated with specific BTL campaigns to boost the brand experience.

Mobile ad formats commonly found in this market include standard static display as well as rich media and high impact formats. Mobile is also used for location and carrier targeting.

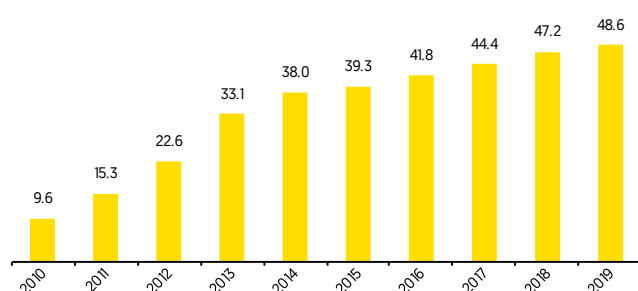
| Age group | mobile phone penetration (%) | of which smartphones (%) |
|-----------|------------------------------|--------------------------|
| 5-15      | 11.2                         | 68.9                     |
| 16-24     | 65.3                         | 73.6                     |
| 25-34     | 79.5                         | 64.2                     |
| 35-44     | 80.8                         | 50.4                     |
| 45-54     | 77.5                         | 36.4                     |
| 55-64     | 68.9                         | 27.6                     |
| 65-74     | 53.5                         | 14.0                     |

# Estonia

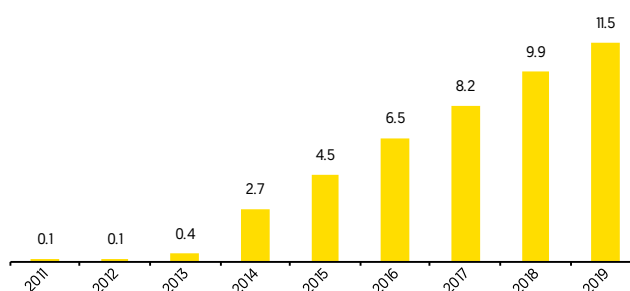
|                                                        | 2010  | 2011  | 2012  | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|--------------------------------------------------------|-------|-------|-------|------|------|------|------|------|------|------|
| Smartphone penetration (%)                             | 6.4   | 9.1   | 10.3  | 17.2 | 25.0 | 48.0 | 60.0 | 65.0 | 68.0 | 70.0 |
| Tablet penetration (%)                                 | 0.5   | 1.0   | 2.5   | 7.8  | 15.0 | 28.2 | 30.0 | 31.2 | 33.0 | 34.8 |
| Internet - Average daily minutes of consumption        | 114   | 124   | 133   | 142  | 150  | 183  | 208  | 225  | 233  | 249  |
| Mobile internet - Average daily minutes of consumption | 11    | 19    | 30    | 47   | 57   | 72   | 87   | 100  | 110  | 121  |
| % of average daily internet consumption via mobile     | 9.6   | 15.3  | 22.6  | 33.1 | 38.0 | 39.3 | 41.8 | 44.4 | 47.2 | 48.6 |
| Total advertising expenditure (€ m)                    | 67    | 72    | 72    | 76   | 81   | 84   | 86   | 90   | 92   | 95   |
| % of programmatic adspend going to mobile              | -     | -     | -     | -    | -    | -    | 35.0 | 40.0 | 50.0 | 50.0 |
| % of Total adspend delivered via mobile                | 0.1   | 0.1   | 0.1   | 0.4  | 2.7  | 4.5  | 6.5  | 8.2  | 9.9  | 11.5 |
| Adspend delivered via mobile devices (€ m)             | 0.05  | 0.1   | 0.1   | 0.3  | 2.2  | 3.8  | 5.6  | 7.4  | 9.1  | 10.9 |
| <i>Mobile display</i>                                  | 0.04  | 0.1   | 0.1   | 0.3  | 2.1  | 3.5  | 3.3  | 4.1  | 4.1  | 4.9  |
| <i>Mobile classified</i>                               | -     | -     | -     | -    | -    | -    | 1.8  | 2.7  | 4.1  | 4.9  |
| <i>Mobile search</i>                                   | 0.002 | 0.003 | 0.005 | 0.02 | 0.2  | 0.3  | 0.4  | 0.6  | 0.8  | 1.0  |

Source: TNS Emor Internet Establishment Survey, TNS Emor AdEx, TNS Emor Media Day 2012&2016&2017, Zenith estimates

## Mobile as % of daily internet consumption



## Mobile as % of total adspend



The principal mobile providers in the Estonian market are Telia, Elisa and Tele2.

According to Statistics Estonia research in 2016, nearly 65% of all internet users had used mobile devices to access the internet while away from home or the office. Using mobile to access emails, social media, news sites etc. is most popular among young Estonians, with 91.4% of internet users aged 16–24 having used their smartphones for browsing. The percentage drops gradually through the age groups, reaching 51.5% among 45 to 54-year-olds and as low as 13.1% for those aged 64–74, who still do not use the internet very much.

As far as mobile ad formats are concerned, regular JPG or GIF ads between news stories are very popular, but more clients have started to use HTML5 banners and mobile video ads. Social media ads are also an important part of many campaign plans, as Instagram and Snapchat in addition to Facebook are becoming more popular.

There is little data about mobile adspend in Estonia, but we have seen an increase in mobile ad volumes at a local level and also in international channels. Browsing sessions via mobile devices have expanded to account for 30%-40% of all website visits.

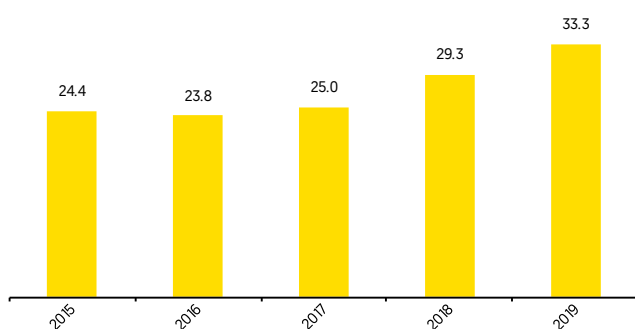
Large publishers have implemented different mobile ad formats e.g. in news feeds, as full-screen or as footers. The pricing (CPM) tends to be much higher than for display. For instance, on two major news sites in Estonia, CPM for mobile banners between news is almost as high as for its desktop site hat. We have seen that mobile banners tend to have a higher CTR percentage than similar desktop banners on publishers' sites.

As e-commerce continues to grow, companies are putting more effort into creating easy and mobile-friendly shopping or browsing experiences.

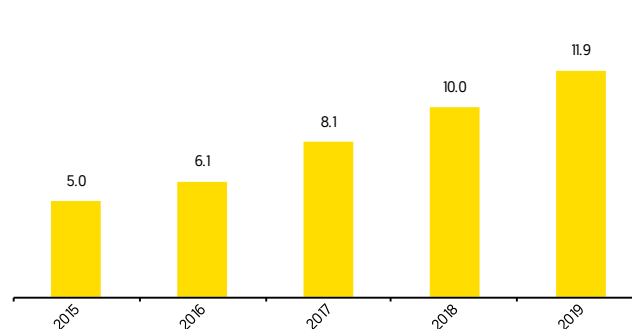
|                                                        | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  | 2019  |
|--------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Smartphone penetration [%]                             | -     | 42    | 49    | 55    | 65    | 67    | 73    | 75    | 80    | 81    |
| Tablet penetration [%]                                 | 4     | 7     | 12    | 22    | 28    | 32    | 43    | 40    | 39    | 40    |
| Internet - Average daily minutes of consumption        | 113   | 126   | 135   | -     | 150   | 160   | 189   | 200   | 205   | 210   |
| Mobile internet - Average daily minutes of consumption | -     | -     | -     | -     | -     | 39    | 45    | 50    | 60    | 70    |
| % of average daily internet consumption via mobile     | -     | -     | -     | -     | -     | 24.4  | 23.8  | 25.0  | 29.3  | 33.3  |
| Total advertising expenditure (€ m)                    | 1,276 | 1,345 | 1,311 | 1,208 | 1,154 | 1,155 | 1,168 | 1,166 | 1,183 | 1,209 |
| % of programmatic adspend going to mobile              | -     | -     | -     | -     | 25.1  | 29.8  | 38.5  | 43.8  | 42.9  | 42.0  |
| % of Total adspend delivered via mobile                | -     | -     | -     | -     | -     | 5.0   | 6.1   | 8.1   | 10.0  | 11.9  |
| Adspend delivered via mobile devices (€ m)             | -     | -     | -     | -     | -     | 58    | 71    | 95    | 118   | 144   |
| Mobile display                                         | -     | -     | -     | -     | -     | 41    | 53    | 67    | 84    | 94    |
| Mobile classified                                      | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| Mobile search                                          | -     | -     | -     | -     | -     | 17    | 18    | 28    | 34    | 50    |

Source: TNS Atlas 2015, Consumer Barometer, Zenith

Mobile as % of daily internet consumption



Mobile as % of total adspend



Widespace and Sanoma are the two biggest operators in Finland. The Widespace mobile network reaches over 80% of the smartphone-using population and has 2.6 million unique users every week. Sanoma, meanwhile, reaches three million Finns a week.

The most common ad formats on smartphones include mobile takeover 600x600, swipe cube, split screen video, stream view and interstitial. Internet usage revolves much more around smartphones than previously. Online videos are watched via mobile more often, especially short-form content [20% of Finns watch videos via mobile phones daily, and 32% less often but at least weekly]. Video is used more often in mobile ads due to the new stream view formats being available.

87% of all TV viewers use a second screen whilst watching TV, and mobile phone is the leading second-screen device.

In the future, smartwatches may become a more popular delivery vehicle for mobile advertisements as well. Mobile will have a solid role in all online campaigns as consumption grows. By 2019, mobile consumption will account for a third of all online consumption.

Mobile search is growing: people have more choice than ever, and for navigating through that, search is a lifeline. Soon, mobile will overtake desktop's digital budget.

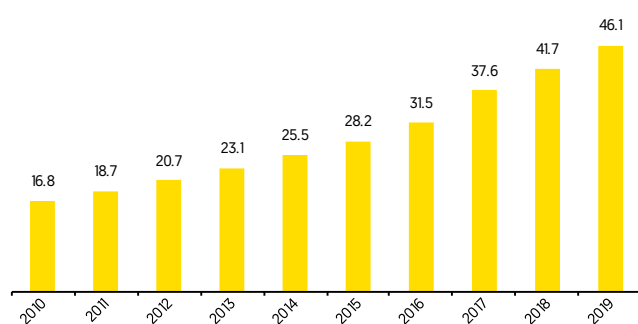
Mobile usage will grow in the older target group as well [at the moment the core users are 15-29 years old].

# France

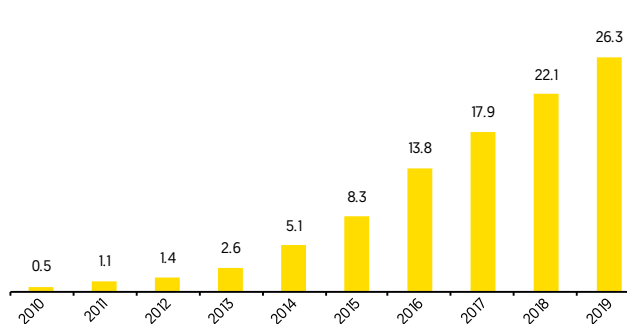
|                                                            | 2010   | 2011   | 2012   | 2013  | 2014   | 2015   | 2016   | 2017   | 2018   | 2019   |
|------------------------------------------------------------|--------|--------|--------|-------|--------|--------|--------|--------|--------|--------|
| Smartphone penetration 15+ (%)                             | 27.4   | 35.3   | 43.0   | 49.1  | 55.2   | 60.0   | 64.7   | 69.2   | 73.4   | 77.1   |
| Tablet penetration 15+ (%)                                 | -      | 4.1    | 12.8   | 27.7  | 43.0   | 52.0   | 54.0   | 56.2   | 58.4   | 60.7   |
| Internet - Average daily minutes of consumption 15+        | 75     | 79     | 84     | 89    | 94     | 100    | 106    | 111    | 115    | 119    |
| Mobile internet - Average daily minutes of consumption 15+ | 13     | 15     | 17     | 20    | 24     | 28     | 33     | 42     | 48     | 55     |
| % of average daily internet consumption via mobile         | 16.8   | 18.7   | 20.7   | 23.1  | 25.5   | 28.2   | 31.5   | 37.6   | 41.7   | 46.1   |
| Total advertising expenditure (€m)                         | 10,144 | 10,449 | 10,232 | 9,974 | 10,065 | 10,115 | 10,285 | 10,511 | 10,803 | 11,150 |
| % of programmatic adspend going to mobile                  | -      | -      | -      | -     | -      | -      | -      | -      | -      | -      |
| % of Total adspend delivered via mobile                    | 0.5    | 1.1    | 1.4    | 2.6   | 5.1    | 8.3    | 13.8   | 17.9   | 22.1   | 26.3   |
| Adspend delivered via mobile devices (€m)                  | 52     | 112    | 146    | 259   | 514    | 844    | 1,423  | 1,884  | 2,390  | 2,935  |
| Mobile display                                             | 20     | 32     | 51     | 79    | 180    | 277    | 444    | 630    | 845    | 1,081  |
| Mobile video                                               | -      | -      | -      | 30    | 70     | 111    | 158    | 228    | 313    | 413    |
| Mobile search                                              | 32     | 80     | 95     | 150   | 264    | 456    | 821    | 1,026  | 1,232  | 1,441  |

Source: Médiamétrie, Zenith

Mobile as % of daily internet consumption



Mobile as % of total adspend



In France, the main mobile operator is Orange, with 29 million subscribers. Some way behind come SFR (14.6m) and Free (12.4m). In July 2017, 37.4 million users aged 11+ connected with an app or browser; the top mobile sites according to views via smartphones were Google (35.6 million unique views), Facebook (34.5m), YouTube (30.4m), Instagram (16.6m) and Twitter (15.8m).

Native ads have increased in popularity thanks to the format permitting a less disruptive user experience. Meanwhile, Interstitial and banners (on the top or bottom screen) are still the most popular mobile ad formats. Banners allow high levels of reach and interstitials offer many creative features as well as a high level of engagement. The Parallax format is an eye-catching innovation and could turn out to be a good alternative to classical formats.

The number of French web users on PC has stopped growing, whereas the number using mobile devices continues to grow. Smartphones have not yet replaced desktops, though: according to Médiamétrie, there are around 42.2 million users (11+) of desktops in France, around 35.4 million smartphone users and 20 million tablet users.

Mobile investment is growing very fast, averaging 39% a year between 2016 and 2019 for mobile display and 21% for mobile search. Mobile represented 27% of internet investment in 2016 and it will represent 56% in 2019.

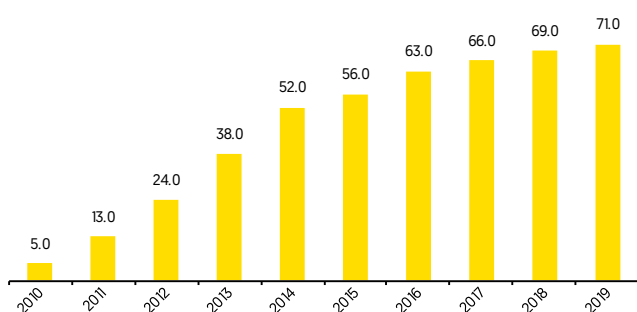
Monetizing virtual reality and augmented reality will be a challenge for advertisers in the coming years.

# Germany

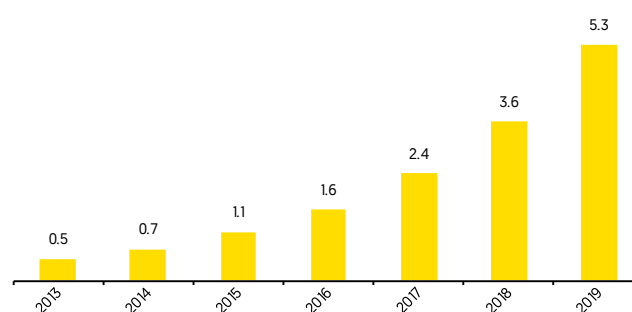
|                                                        | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   | 2019   |
|--------------------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Smartphone penetration [%]                             | 12.6   | 23.0   | 32.0   | 40.5   | 56.0   | 64.5   | 71.7   | 77.3   | 81.3   | 85.3   |
| Tablet penetration [%]                                 | 2.0    | 4.8    | 18.2   | 24.9   | 34.2   | 38.4   | 42.5   | 45.8   | 48.4   | 49.0   |
| Internet - Average daily minutes of consumption        | 77     | 80     | 83     | 108    | 111    | 108    | 128    | 132    | 134    | 136    |
| Mobile internet - Average daily minutes of consumption | 4      | 10     | 20     | 41     | 58     | 60     | 81     | 87     | 92     | 97     |
| % of average daily internet consumption via mobile     | 5.0    | 13.0   | 24.0   | 38.0   | 52.0   | 56.0   | 63.0   | 66.0   | 69.0   | 71.0   |
| Total advertising expenditure [€ m]                    | 17,961 | 18,482 | 18,212 | 18,252 | 18,939 | 19,296 | 19,875 | 20,138 | 20,602 | 21,035 |
| % of programmatic adspend going to mobile              | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| % of Total adspend delivered via mobile                | -      | -      | -      | 0.5    | 0.7    | 1.1    | 1.6    | 2.4    | 3.6    | 5.3    |
| Adspend delivered via mobile devices [€ m]             | -      | -      | -      | 88     | 134    | 209    | 317    | 483    | 736    | 1,116  |
| Mobile display                                         | -      | -      | -      | 88     | 134    | 204    | 310    | 472    | 719    | 1,089  |
| Mobile classified                                      | -      | -      | -      | -      | -      | 5      | 7      | 11     | 17     | 27     |
| Mobile search                                          | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |

Source: Zenith

Mobile as % of daily internet consumption



Mobile as % of total adspend



In the German market, the principal mobile providers are T-Mobile [whose resellers are Congstar, Lebara, ja! Mobil, Penny Mobil], Vodafone [otelo, FYVE, BildMobil, EDEKA mobil, Rossmann mobil] and O<sub>2</sub> [Telefonica] merged with KPN/ eplus [the resellers are K-classic Mobil, simyo, BASE, blau.de, Aldi Talk, Ay Yildiz, SimTim, ring, Ortel, netzclub, MTV mobile, Fonice, Alice Mobile, ADAC mobile for members].

Mobile device penetration decreases with increasing age; around 87% of those aged 14-19 use mobile devices, but only 17% of those aged 70+ do so. Around 50% of tablet users watch videos on the device at least once a week.

There will be a further shift from desktop to mobile over the next three years, but the rate will decelerate until eventually mobile will account for perhaps 80% to 85%

of average online usage. Generally speaking, content on mobile does not require much involvement on the part of the user; it deals in mostly 'snack' content such as incentives and promotions [as well as mobile shopping, of course], compared to the higher-involvement big screens of desktop and TV. In total, around 58% of all digital usage takes place on mobile devices.

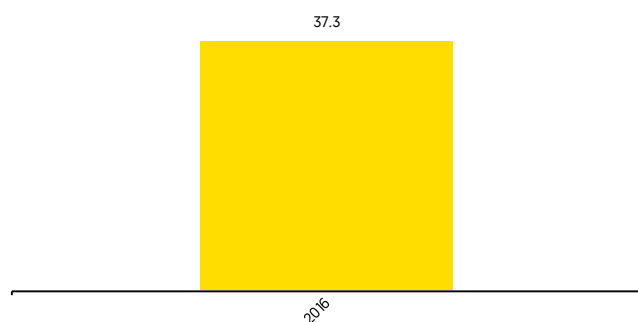
One to one messaging will be possible from 2018 thanks to the loosening of data security regulations. We also expect AR and VR to drive innovation and growth, and for mobile advertising to become even more granular and thrive even more at the local level. Apps will become more important too, as browser usage decreases, and mobile DSPs will be used for meta-DSPs and meta-DMPs.

# Greece

|                                                        | 2010  | 2011  | 2012  | 2013  | 2014  | 2015 | 2016  | 2017  | 2018  | 2019  |
|--------------------------------------------------------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|
| Smartphone penetration [%]                             | -     | -     | -     | 22.2  | 32.0  | 39.9 | 48.9  | 57.6  | 62.0  | 64.5  |
| Tablet penetration [%]                                 | -     | -     | -     | 0.3   | 2.4   | 6.1  | 9.6   | 9.6   | 11.5  | 11.9  |
| Internet - Average daily minutes of consumption        | 123   | 119   | 124   | 126   | 133   | 139  | 206   | -     | -     | -     |
| Mobile internet - Average daily minutes of consumption | -     | -     | -     | -     | -     | -    | 77    | -     | -     | -     |
| % of average daily internet consumption via mobile     | -     | -     | -     | -     | -     | -    | 37.3  | -     | -     | -     |
| Total advertising expenditure [€ m]                    | 1,940 | 1,505 | 1,062 | 1,015 | 1,095 | 980  | 1,004 | 1,036 | 1,044 | 1,084 |
| % of programmatic adspend going to mobile              | -     | -     | -     | -     | -     | -    | -     | -     | -     | -     |
| % of Total adspend delivered via mobile                | -     | -     | -     | -     | -     | -    | -     | -     | -     | -     |
| Adspend delivered via mobile devices [€ m]             | -     | -     | -     | -     | -     | -    | -     | -     | -     | -     |
| Mobile display                                         | -     | -     | -     | -     | -     | -    | -     | -     | -     | -     |
| Mobile classified                                      | -     | -     | -     | -     | -     | -    | -     | -     | -     | -     |
| Mobile search                                          | -     | -     | -     | -     | -     | -    | -     | -     | -     | -     |

Source: Zenith

## Mobile as % of daily internet consumption



Greece's troubled economic situation of the past few years has left fewer people with the disposable income to spend on devices such as smartphones. In early 2016, mobile penetration was over 96%, although only just under 50% of people had smartphones, with peak ownership age being the 18-24 age group, of whom 78.3% owned a smartphone. Where they are used, they tend to edge out other technologies, most obviously items such as digital cameras and in-car navigation systems, but also tablets. In fact, larger format smartphones are proving popular, and accounted for 65% of all sales in 2016. Around 67% of Greeks use a mobile device to access the internet.

Nearly all Greek smartphone owners use their device to read emails, access social networks and surf the web, but more and more consumers are also using their smartphones to look for products and services, to navigate and to make payments and banking transactions. Mobile penetration is constantly gaining ground, with smartphones quickly evolving into a mainstream browsing device.

Greece's mobile market is dominated by three mobile network operators, namely Wind Hellas, Vodafone Greece

and Cosmote. Mobile phone operators in Greece have started dropping the discounts they used to provide for new mobile phone devices purchased with a monthly subscription. As a result, such purchases dropped to a 52% volume share in 2016, as most people prefer to use their subsidy to reduce their monthly bill instead; pay-as-you-go and phone-only have increased their shares accordingly.

The cost of owning a smartphone device in Greece has been dropping over the years as telecommunication service providers have increased competition by broadening offers. Nonetheless, monthly subscription costs for smartphones remain higher than for feature phones on average. Pre-paid pay-as-you-go mobile service packages for smartphones are also popular in Greece, particularly among younger customers, as they are relatively budget-friendly.

Typical mobile ad formats include SMS, full-page display, image text/banner, and click to download.

### Trends

Daily smartphone consumption rose from 1 hour 17 minutes in 2012 to pass the 2 hour 30 minutes mark in 2017.

Penetration of wearable devices is expected to grow quickly, which will have an impact on brand relationships with consumers. E-commerce is also expected to grow rapidly.

AI and chat bots used by brands are expected to start allowing for a 24/7 always-on approach to customer engagement.

The rise of film and TV sites [e.g. Netflix, Amazon Prime] that remove advertising for a subscription fee is going to continue. Such services are highly popular with the young. These types of models will be further joined by micro

payments, with the rise of online buying methods being built into the browsers. These micro payments will then be used by media sites as they realise they can use them to boost revenue.

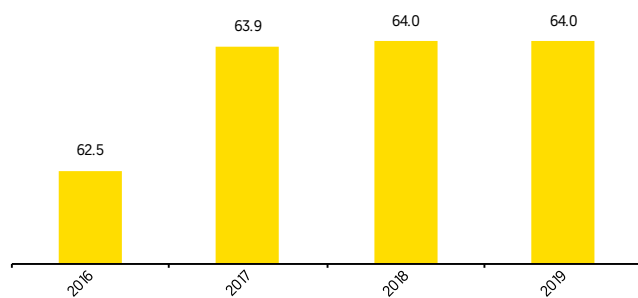
Mobile advertising in Greece is still at a preliminary stage [except for technology, fashion and e-shop brands]. We are anticipating an increase in demand for mobile ads, even for such categories as supermarket chains and FMCG products.

# Hong Kong

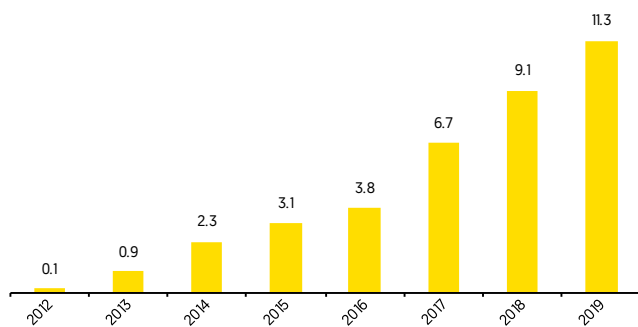
|                                                        | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   | 2019   |
|--------------------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Smartphone penetration [%]                             | -      | -      | -      | 56.2   | 71.7   | 84.7   | 91.0   | 91.5   | 92.0   | 92.5   |
| Tablet penetration [%]                                 | -      | -      | -      | 21.2   | 27.0   | 35.5   | 45.7   | 44.1   | 45.0   | 45.0   |
| Internet - Average daily minutes of consumption        | -      | -      | -      | 141    | 155    | 164    | 259    | 269    | 280    | 291    |
| Mobile internet - Average daily minutes of consumption | -      | -      | -      | -      | -      | -      | 162    | 172    | 179    | 186    |
| % of average daily internet consumption via mobile     | -      | -      | -      | -      | -      | -      | 62.5   | 63.9   | 64.0   | 64.0   |
| Total advertising expenditure [HK\$ m]                 | 13,787 | 16,091 | 18,456 | 19,410 | 20,211 | 20,705 | 19,231 | 19,921 | 20,526 | 21,357 |
| % of programmatic adspend going to mobile              | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| % of Total adspend delivered via mobile                | -      | -      | 0.1    | 0.9    | 2.3    | 3.1    | 3.8    | 6.7    | 9.1    | 11.3   |
| Adspend delivered via mobile devices [HK\$ m]          | -      | -      | 25     | 180    | 463    | 646    | 729    | 1,339  | 1,865  | 2,424  |
| <i>Mobile display</i>                                  | -      | -      | 25     | 180    | 463    | 646    | 729    | 1,339  | 1,865  | 2,424  |
| <i>Mobile classified</i>                               | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| <i>Mobile search</i>                                   | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |

Source: Zenith

*Mobile as % of daily internet consumption*



*Mobile as % of total adspend*

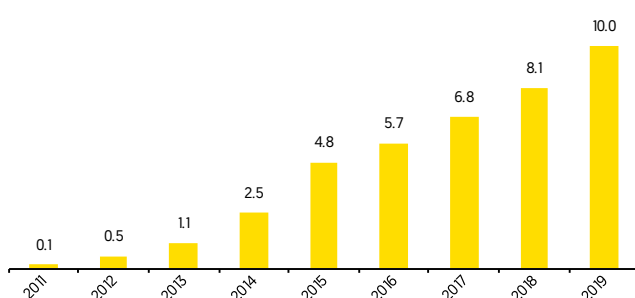


# Hungary

|                                                        | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    | 2019    |
|--------------------------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Smartphone penetration [%]                             | 5.0     | 17.0    | 23.0    | 26.8    | 39.0    | 44.1    | 50.5    | 54.5    | 57.3    | 60.1    |
| Tablet penetration [%]                                 | -       | -       | -       | 5.7     | 9.0     | 11.9    | 14.0    | 16.1    | 18.5    | 21.3    |
| Internet - Average daily minutes of consumption        | 71      | 141     | 116     | 123     | 127     | 131     | 133     | 135     | 140     | 142     |
| Mobile internet - Average daily minutes of consumption | -       | -       | -       | -       | -       | -       | -       | -       | -       | -       |
| % of average daily internet consumption via mobile     | -       | -       | -       | -       | -       | -       | -       | -       | -       | -       |
| Total advertising expenditure [HUF m]                  | 154,981 | 150,389 | 141,495 | 147,927 | 160,585 | 166,008 | 196,417 | 211,595 | 222,158 | 226,256 |
| % of programmatic adspend going to mobile              | -       | -       | -       | -       | -       | -       | -       | -       | -       | -       |
| % of Total adspend delivered via mobile                | -       | 0.1     | 0.5     | 1.1     | 2.5     | 4.8     | 5.7     | 6.8     | 8.1     | 10.0    |
| Adspend delivered via mobile devices [HUF m]           | -       | 221     | 762     | 1,652   | 4,014   | 7,936   | 11,110  | 14,443  | 18,053  | 22,626  |
| <i>Mobile display</i>                                  | -       | -       | -       | -       | -       | -       | -       | -       | -       | -       |
| <i>Mobile classified</i>                               | -       | -       | -       | -       | -       | -       | -       | -       | -       | -       |
| <i>Mobile search</i>                                   | -       | -       | -       | -       | -       | -       | -       | -       | -       | -       |

Source: Kantar, TGI, GemiusAudience, IAB, Zenith

## Mobile as % of total adspend



There are three key mobile providers in Hungary, who are the top three mobile advertisers as well: Telekom, Telenor and Vodafone. In terms of operating systems, approximately seven out of ten devices run Android, two iOS, and the rest run Windows or Symbian.

Over the past few years mobile has enjoyed extensive growth in the Hungarian market. Advertisers are becoming more adept at exploiting mobile ad possibilities both in terms of formats and buying methods. Programmatic buying drives mobile spending further, and m-commerce is becoming more popular.

In the upcoming years we do expect further increases in mobile ad spending, albeit at a slower rate. The principal drivers will be programmatic (from the technology side) and video (with regard to formats).

Standard mobile ads are widely used, and new rich media formats are developed by sales houses or adapted from those used in other markets. Although CPM and flat fee buying methods are the most common in direct buys, many sales houses are starting to use programmatic mobile advertising. Currently these are mainly via open auction.

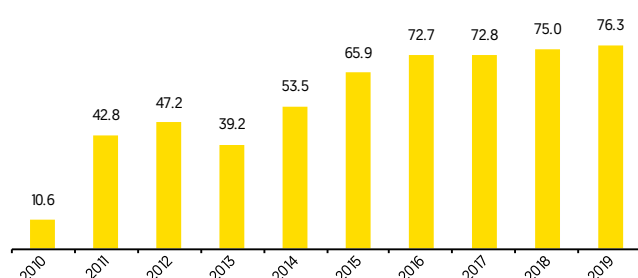
Overall, e-commerce is increasing, although consumers still have a low level of trust in online payment systems.

# India

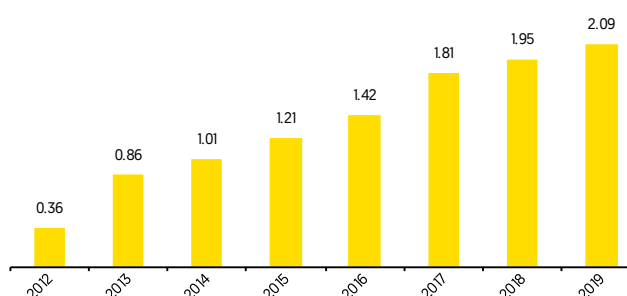
|                                                        | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    | 2019    |
|--------------------------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Smartphone penetration (%)                             | 3.0     | 5.0     | 9.0     | 14.5    | 21.2    | 28.8    | 32.7    | 36.6    | 39.4    | 42.7    |
| Tablet penetration (%)                                 | 2.7     | 4.8     | 11.0    | 13.9    | 15.0    | 15.5    | 15.6    | 15.6    | 15.7    | 15.8    |
| Internet - Average daily minutes of consumption        | 11      | 15      | 16      | 24      | 36      | 41      | 48      | 62      | 72      | 80      |
| Mobile internet - Average daily minutes of consumption | 1       | 7       | 8       | 9       | 19      | 27      | 35      | 45      | 54      | 61      |
| % of average daily internet consumption via mobile     | 11      | 43      | 47      | 39      | 53      | 66      | 73      | 73      | 75      | 76      |
| Total advertising expenditure (INR m)                  | 244,700 | 268,685 | 290,093 | 313,146 | 372,889 | 442,690 | 488,792 | 538,408 | 601,834 | 673,384 |
| % of programmatic adspend going to mobile              | -       | -       | -       | -       | -       | -       | -       | -       | -       | -       |
| % of Total adspend delivered via mobile                | -       | -       | 0.4     | 0.9     | 1.0     | 1.2     | 1.4     | 1.8     | 1.9     | 2.1     |
| Adspend delivered via mobile devices (INR m)           | -       | -       | 1,044   | 2,685   | 3,773   | 5,343   | 6,946   | 9,769   | 11,723  | 14,067  |
| Mobile display                                         | -       | -       | 562     | 1,484   | 2,058   | 2,881   | 3,745   | 5,216   | 6,259   | 7,511   |
| Mobile classified                                      | -       | -       | 172     | 432     | 622     | 898     | 1,167   | 1,669   | 2,003   | 2,404   |
| Mobile search                                          | -       | -       | 311     | 769     | 1,094   | 1,564   | 2,033   | 2,884   | 3,460   | 4,152   |

Source: Zenith

Mobile as % of daily internet consumption



Mobile as % of total adspend



It is projected that India will lead the world in smartphone adoption over the next few years with a net addition of 350 million connections during 2016-2020. Mobile phone usage in India has been rising continuously since 2012 due to a number of factors. Availability of cheaper smart phones thanks to the Chinese players, high penetration of internet services and cheaper affordable data packages have all led to this stupendous growth. Having said that, the continued relevance of feature phones makes India stand out as the biggest feature phone market globally, accounting for about 30% of the global market.

Chinese mobile phone makers currently dominate India's smartphone market and account for over 50% of all smartphones sold. We also witnessed wireless data prices dip more than 48% following the entry of Reliance Jio in September 2016, which disrupted the market. Airtel, with 266 million users, continues to be the biggest operator, followed by Vodafone (198 million) and Idea (175 million).

There was a time in India when people relied on television for entertainment; now, the game has totally changed. Social fragmentation and individual escapism has ensured

that people prefer mobile phones to print and television. Currently we spend just about four hours on TV, two hours on print and 28 hours on average per week on our mobile phones, mostly for entertainment, followed by search, social media, messaging and shopping.

This shift has also been facilitated by the availability of content, entertainment on the go and cheaper data rates. So much so that now 74% of all web traffic goes via mobile and just 26% via desktops, a proportion that's second highest in the world, after Nigeria. Android phones dominate the market, with more than 95% share.

Interestingly, 72% of internet users in India are under the age of 35. The market is still largely dominated by males, with 69% of traffic being consumed by them. Youngsters being tech-savvy and more aware, we also see ad-blocking picking up significantly in India. And with that, advertisers are moving away from banners or videos and resorting to more native and contextual ads to keep the audience engaged.

There has been a sharp increase in the number of people using voice commands for search and other functions

like Siri and Cortana. Brands are welcoming these kinds of advertisements as they increase the chances of the brand topping the organic search lists and differentiating themselves from other brands who still use banner ads.

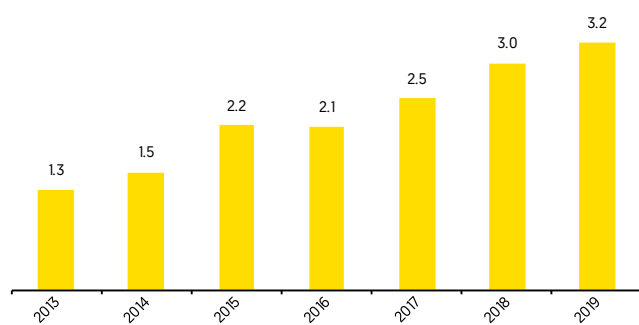
Some advertisers are also using motion sensor technology to make creative, interactive, joyful ads that create a high level of engagement.

# Israel

|                                                        | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  | 2019  |
|--------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Smartphone penetration (%)                             | -     | -     | -     | -     | -     | 73.9  | 82.9  | 84.2  | 86.2  | 87.8  |
| Tablet penetration (%)                                 | -     | -     | -     | 11.6  | 34.1  | 39.2  | 40.4  | 38.3  | 40.2  | 41.1  |
| Internet - Average daily minutes of consumption        | 126   | 131   | 124   | 114   | 128   | 133   | 170   | 183   | 194   | 202   |
| Mobile internet - Average daily minutes of consumption | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| % of average daily internet consumption via mobile     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| Total advertising expenditure (ILS m)                  | 4,064 | 3,918 | 3,506 | 3,513 | 3,769 | 3,851 | 3,885 | 3,943 | 3,989 | 4,007 |
| % of programmatic adspend going to mobile              | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| % of Total adspend delivered via mobile                | -     | -     | -     | 1.3   | 1.5   | 2.2   | 2.1   | 2.5   | 3.0   | 3.2   |
| Adspend delivered via mobile devices (ILS m)           | -     | -     | -     | 46    | 58    | 83    | 83    | 99    | 119   | 130   |
| <i>Mobile display</i>                                  | -     | -     | -     | 46    | 58    | 83    | 83    | 99    | 119   | 130   |
| <i>Mobile classified</i>                               | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| <i>Mobile search</i>                                   | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |

Source: Zenith

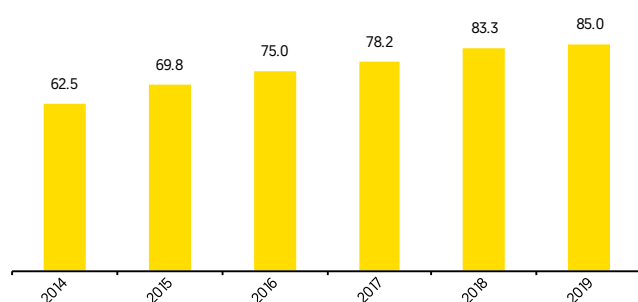
*Mobile as % of total adspend*



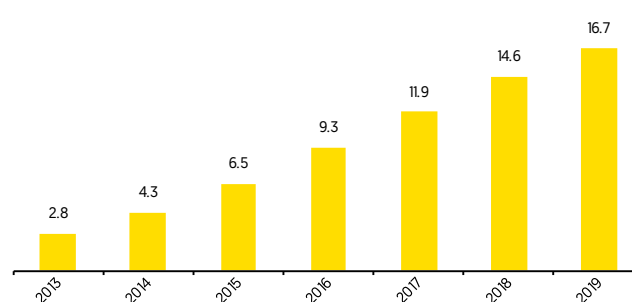
|                                                        | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  | 2019  |
|--------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Smartphone penetration [%]                             | 13.0  | 24.0  | 31.4  | 41.0  | 48.9  | 57.0  | 61.8  | 64.9  | 67.9  | 68.5  |
| Tablet penetration [%]                                 | 2.4   | 4.9   | 14.9  | 19.6  | 25.3  | 29.0  | 32.1  | 35.0  | 37.2  | 38.5  |
| Internet - Average daily minutes of consumption        | 43    | 37    | 41    | 34    | 40    | 43    | 48    | 55    | 60    | 65    |
| Mobile internet - Average daily minutes of consumption | -     | -     | -     | -     | 25    | 30    | 36    | 43    | 50    | 55    |
| % of average daily internet consumption via mobile     | -     | -     | -     | -     | 62.5  | 69.8  | 75.0  | 78.2  | 83.3  | 85.0  |
| Total advertising expenditure (€ m)                    | 8,575 | 8,361 | 7,528 | 6,893 | 6,870 | 7,000 | 7,258 | 7,347 | 7,497 | 7,620 |
| % of programmatic adspend going to mobile              | -     | -     | -     | -     | 9.0   | 15.0  | 25.0  | 29.0  | 32.0  | 36.0  |
| % of Total adspend delivered via mobile                | -     | -     | -     | 2.8   | 4.3   | 6.5   | 9.3   | 11.9  | 14.6  | 16.7  |
| Adspend delivered via mobile devices (€ m)             | -     | -     | -     | 193   | 298   | 457   | 673   | 875   | 1,094 | 1,275 |
| Mobile display                                         | -     | -     | -     | 110   | 169   | 319   | 472   | 613   | 788   | 913   |
| Mobile classified                                      | -     | -     | -     | 10    | 11    | 17    | 29    | 26    | 33    | 43    |
| Mobile search                                          | -     | -     | -     | 73    | 119   | 121   | 172   | 236   | 273   | 319   |

Source: eMarketer, Audiweb, Politecnico, Zenith

Mobile as % of daily internet consumption



Mobile as % of total adspend



The main mobile service providers in Italy are Tim, with a market share of 30.2%, followed by Vodafone (29.4%) and Wind (22.1%). Mobile subscriptions reached 97 million in 2016.

21 million Italians connect daily to the internet via mobile devices, about 27 million each month. The daily mobile universe reach is similar for men and women [47.5% vs 48.1% penetration respectively], while women spend more time online via mobile than their male counterparts [+30 minutes]. Mobile penetration is highest among the younger age groups (18-34 year-olds, about 80% reach on a monthly basis).

In 2017, the value of mobile advertising investment is expected to reach €875 million [+30% vs 2016]. 70% of the formats used on mobile are display (video and social included), followed by search (27%). The growth recorded in 2017 is attributable to over the top properties (especially Google and Facebook), that weigh more than 80%.

Italian retail sales via mobile totalled €3.3 billion in 2016 [+63% vs 2015], representing 17% of the total value of Italian online sales. The steep increase is due to sites that focus

on instant buying business models (such as flash sales), and the initiatives taken to offer a simple and effective customer experience. In addition, the evolution of digital payments has created interesting opportunities for smartphones. Banks, telephone operators and telephone makers are investing in Mobile Wallet. Peer-to-peer payment systems, even by instant messaging and social network operators, are also thriving.

More and more grocery retailers are offering mobile couponing. Another area of development is the use of mobile as a channel of interaction with physical objects (Internet of Things). Smartphones are the main tool allowing individuals to interact in real time with their personal items. This type of approach requires mobile strategies to become an integral part of the design and product development process.

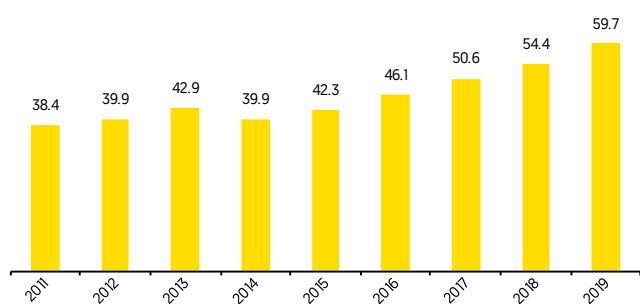
The constant presence of mobile devices in consumer pockets enables the collection of useful data for segmenting users according to location, or to better understand customer behaviour within physical stores.

# Japan

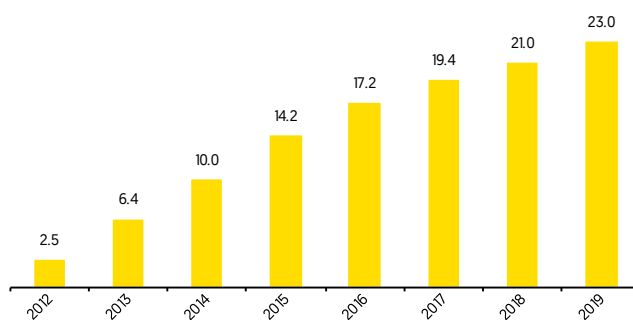
|                                                        | 2010      | 2011      | 2012      | 2013      | 2014      | 2015      | 2016      | 2017      | 2018      | 2019      |
|--------------------------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Smartphone penetration (%)                             | 9.7       | 29.3      | 49.5      | 62.6      | 72.5      | 77.3      | 80.0      | 82.4      | 84.2      | 85.0      |
| Tablet penetration (%)                                 | 7.2       | 8.5       | 15.3      | 21.9      | 34.2      | 37.4      | 39.5      | 41.1      | 42.0      | 43.0      |
| Internet - Average daily minutes of consumption        | 69        | 74        | 79        | 81        | 61        | 61        | 63        | 66        | 69        | 72        |
| Mobile internet - Average daily minutes of consumption | -         | 28        | 31        | 35        | 24        | 26        | 29        | 33        | 37        | 43        |
| % of average daily internet consumption via mobile     | -         | 38.4      | 39.9      | 42.9      | 39.9      | 42.3      | 46.1      | 50.6      | 54.4      | 59.7      |
| Total advertising expenditure (JPY m)                  | 4,051,300 | 3,986,300 | 4,144,600 | 4,228,100 | 4,392,000 | 4,429,000 | 4,561,000 | 4,668,000 | 4,726,000 | 4,833,000 |
| % of programmatic adspend going to mobile              | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |
| % of Total adspend delivered via mobile                | -         | -         | 2.5       | 6.4       | 10.0      | 14.2      | 17.2      | 19.4      | 21.0      | 23.0      |
| Adspend delivered via mobile devices (JPY m)           | -         | -         | 104,800   | 270,000   | 440,200   | 627,900   | 784,492   | 905,592   | 992,460   | 1,111,590 |
| <i>Mobile display</i>                                  | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |
| <i>Mobile classified</i>                               | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |
| <i>Mobile search</i>                                   | -         | -         | -         | -         | -         | -         | -         | -         | -         | -         |

Source: Ministry of Internal Affairs and Communication, Dentsu, D2C, Zenith

*Mobile as % of daily internet consumption*



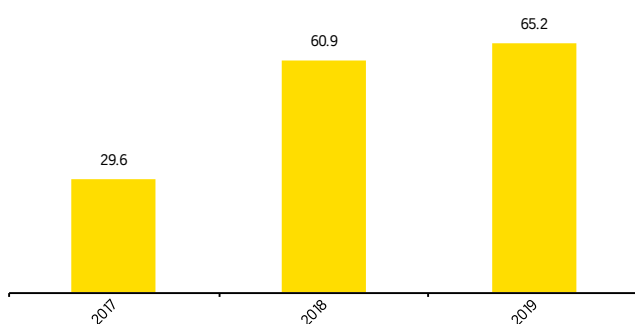
*Mobile as % of total adspend*



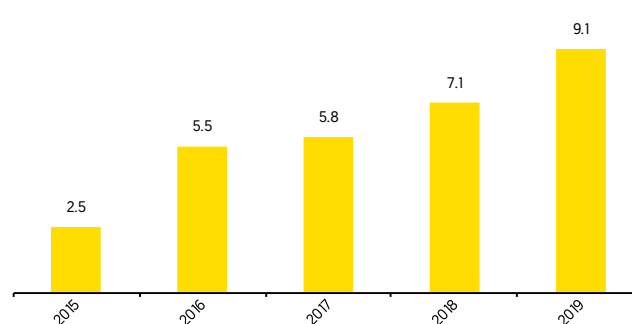
|                                                        | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|--------------------------------------------------------|------|------|------|------|------|------|------|------|------|------|
| Smartphone penetration (%)                             | -    | -    | -    | 19   | 27   | 47   | 55   | 62   | 68   | 73   |
| Tablet penetration (%)                                 | -    | -    | -    | 7    | 11   | 19   | 22   | 25   | 26   | 27   |
| Internet - Average daily minutes of consumption        | -    | -    | -    | -    | 110  | 94   | 80   | 71   | 115  | 115  |
| Mobile internet - Average daily minutes of consumption | -    | -    | -    | -    | 20   | 20   | 17   | 21   | 70   | 75   |
| % of average daily internet consumption via mobile     | -    | -    | -    | -    | -    | -    | -    | 29.6 | 60.9 | 65.2 |
| Total advertising expenditure (€ m)                    | 65.3 | 68.8 | 70.9 | 73.4 | 75.6 | 77.2 | 77.6 | 77.7 | 79.0 | 79.7 |
| % of programmatic adspend going to mobile              | -    | -    | -    | -    | -    | -    | -    | 35.0 | 40.0 | 50.0 |
| % of Total adspend delivered via mobile                | -    | -    | -    | -    | -    | 2.5  | 5.5  | 5.8  | 7.1  | 9.1  |
| Adspend delivered via mobile devices (€ m)             | -    | -    | -    | -    | -    | 1.9  | 4.3  | 4.5  | 5.6  | 7.3  |
| <i>Mobile display</i>                                  | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| <i>Mobile classified</i>                               | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| <i>Mobile search</i>                                   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |

Source: Zenith

*Mobile as % of daily internet consumption*



*Mobile as % of total adspend*



The main mobile service providers in Latvia are Tele2, LMT and Bite.

Mobile internet users tend to be young [78% of them are aged under 45], either working or in full-time study, have higher incomes, and if they are married they are more likely to have children. Mobile is tending to replace desktop usage, but complements all other channels e.g. TV, OOH.

The most common mobile ad formats are paid social, simple display and search. Interactive options such as scratch or shake to activate are also used. Apps/technologies using the camera are becoming more popular including Snapchat, Google Lens and Pinterest Lens. Wearables and the IOT are becoming more and more part of everyday life.

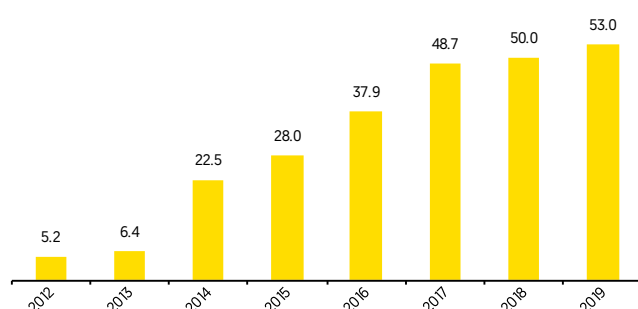
In the near future, we expect to see more precise targeting and the implementation of programmatic buying for mobile advertising.

# Lithuania

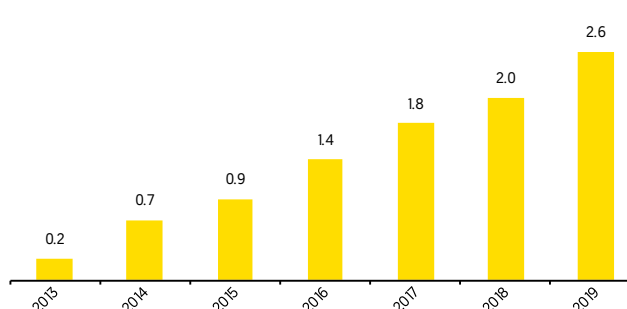
|                                                        | 2010 | 2011 | 2012 | 2013 | 2014 | 2015  | 2016  | 2017  | 2018  | 2019  |
|--------------------------------------------------------|------|------|------|------|------|-------|-------|-------|-------|-------|
| Smartphone penetration (%)                             | -    | 13.6 | 17.0 | 28.8 | 35.1 | 44.7  | 47.6  | 59.4  | 63.0  | 65.0  |
| Tablet penetration (%)                                 | -    | 0.5  | 1.2  | 3.1  | 7.3  | 13.7  | 20.1  | 18.7  | 20.0  | 21.0  |
| Internet - Average daily minutes of consumption        | 73   | 85   | 97   | 110  | 120  | 125   | 140   | 152   | 160   | 168   |
| Mobile internet - Average daily minutes of consumption | -    | -    | 5    | 7    | 27   | 35    | 53    | 74    | 80    | 89    |
| % of average daily internet consumption via mobile     | -    | -    | 5.2  | 6.4  | 22.5 | 28.0  | 37.9  | 48.7  | 50.0  | 53.0  |
| Total advertising expenditure (€ m)                    | 92.9 | 97.6 | 98.4 | 98.2 | 98.4 | 100.3 | 106.3 | 112.8 | 117.4 | 122.1 |
| % of programmatic adspend going to mobile              | -    | -    | -    | -    | -    | -     | -     | -     | -     | -     |
| % of Total adspend delivered via mobile                | -    | -    | -    | 0.2  | 0.7  | 0.9   | 1.4   | 1.8   | 2.0   | 2.6   |
| Adspend delivered via mobile devices (€ m)             | -    | -    | -    | 0.2  | 0.7  | 0.9   | 1.4   | 2.0   | 2.4   | 3.1   |
| <i>Mobile display</i>                                  | -    | -    | -    | 0.2  | 0.7  | 0.9   | 1.4   | 2.0   | 2.4   | 3.1   |
| <i>Mobile classified</i>                               | -    | -    | -    | -    | -    | -     | -     | -     | -     | -     |
| <i>Mobile search</i>                                   | -    | -    | -    | -    | -    | -     | -     | -     | -     | -     |

Source: TNS Altas, TNS Media day, TNS net data, Zenith

*Mobile as % of daily internet consumption*



*Mobile as % of total adspend*



In Lithuania, there are three main mobile service providers: Telia [Omnitel and TEO merged in February 2017], Tele2 and Bitė. According to The Communications Regulatory Authority, Tele2 had the biggest market share [by user number] in 2016 - 43%, followed by Omnitel with 30% and Bitė with 25%.

Mobile users, especially of new mobile devices [smartphones, tablets] tend to be younger people [15-49 years old, although in 2017 more of those within the 40-49 age group started to use them], higher income and higher social status [A-C], people living in bigger cities, specialists, managers, students and the well-educated.

Smartphones are the most popular devices for mobile advertisements, of which banner ads remain the most popular in this market.

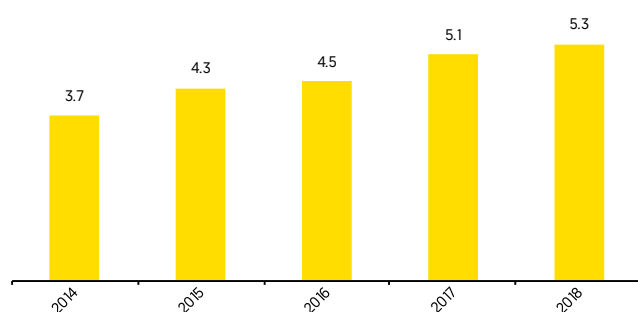
Mobile consumption is rising with every year, although compared to Western Europe, Lithuania still lags behind. In recent years, it was expected that tablet penetration would increase as the devices became more popular across a wider cross-section of the population, but as the newest data reveal, consumption is actually going down by a small amount. The main reason is how good smartphones have become, meaning Lithuanians choose these instead of tablets.

Laptops are now more popular than PCs and most people have several mobile devices. Mobile devices are expected to gradually replace static computers altogether.

|                                                        | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  | 2019  |
|--------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Smartphone penetration (%)                             | -     | -     | -     | -     | -     | 68.0  | -     | -     | -     | -     |
| Tablet penetration (%)                                 | -     | -     | -     | -     | -     | 32.0  | -     | -     | -     | -     |
| Internet - Average daily minutes of consumption        | 50.2  | 54.7  | 58.0  | 62.9  | 66.3  | 67.8  | 70.7  | 74.1  | 81.3  | 84.3  |
| Mobile internet - Average daily minutes of consumption | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| % of average daily internet consumption via mobile     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| Total advertising expenditure (MYR m)                  | 6,001 | 6,502 | 6,660 | 6,871 | 7,608 | 7,153 | 7,153 | 7,367 | 7,737 | 8,199 |
| % of programmatic adspend going to mobile              | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| % of Total adspend delivered via mobile                | -     | -     | -     | -     | 3.7   | 4.3   | 4.5   | 5.1   | 5.3   | 5.5   |
| Adspend delivered via mobile devices (MYR m)           | -     | -     | -     | -     | 281   | 309   | 320   | 374   | 411   | 453   |
| <i>Mobile display</i>                                  | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| <i>Mobile classified</i>                               | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| <i>Mobile search</i>                                   | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |

Source: GWI MY Market Report, Zenith

## Mobile as % of total adspend



The main mobile service providers in Malaysia are Maxis, Celcom, Digi and U-Mobile. Popular apps and services include Google, Facebook, Twitter, Instagram, inMobi, Vserve and Waze, Mobme and Imagine Mobile.

Trend reports [from comScore, GWI and TNS] reveal that Malaysians have increased their access to the internet via mobile devices - from 23% in 2012 to 45% in 2016 - and decreased access via desktop/laptop.

There are more options available in the mobile market today compared to five years ago. Commonly used features include location-based ads, high impact ads [for example, rich banners with video] and interactive formats [shake and tilt ads, scratch mobile screen to unveil and so on].

Clients have also moved into real-time dynamic ads, for example, working with a weather-API website to serve ads according to the weather of the day, every day.

Some combine more than one feature, such as a telecoms company serving real-time dynamic ads in an airport, trying to capture new users - especially foreigners - entering the market. Ads are published within a certain distance of the arrival hall using location-based technology.

Mobile use will grow further. Malaysia's mobile penetration rate has already exceeded 150%, and growth has not slowed in recent years. Phone call prices have declined over time, so telecoms operators have been keen to promote their data plans. It is now very common for them to offer free devices with data plans, bundling larger data plans with higher-spec phones.

Offering data plans with a free device is now very common. The more features/screen size a phone offers, the larger the data plan being bundled.

The appetite for video viewing has increased over time, as has the use of Wi-Fi in public places. In 2016 70% of internet users used their mobile as a second screen while watching TV.

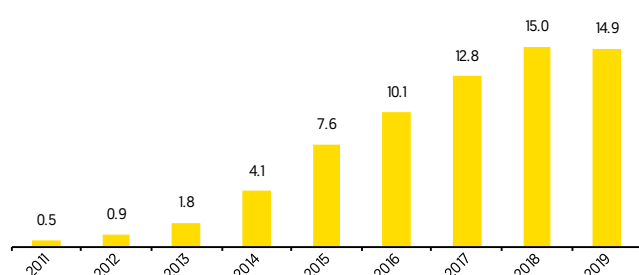
Mobile apps are increasingly being connected to non-phone devices - for example, cars, wrist wearables and payment devices.

# Mexico

|                                                        | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   | 2019   |
|--------------------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Smartphone penetration (%)                             | -      | 8.0    | 12.6   | 19.2   | 42.8   | 42.8   | 57.8   | 68.2   | 72.7   | 79.1   |
| Tablet penetration (%)                                 | -      | -      | 2.2    | 4.3    | 10.5   | 10.5   | 11.2   | 11.8   | 12.6   | 13.3   |
| Internet - Average daily minutes of consumption        | -      | -      | -      | -      | 21     | 24     | 28     | 32     | 38     | 45     |
| Mobile internet - Average daily minutes of consumption | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| % of average daily internet consumption via mobile     | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| Total advertising expenditure (MXN m)                  | 56,613 | 63,138 | 68,453 | 72,699 | 75,746 | 77,841 | 80,269 | 82,215 | 88,685 | 93,087 |
| % of programmatic adspend going to mobile              | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| % of Total adspend delivered via mobile                | -      | 0.5    | 0.9    | 1.8    | 4.1    | 7.6    | 10.1   | 12.8   | 15.0   | 14.9   |
| Adspend delivered via mobile devices (MXN m)           | -      | 297    | 622    | 1,307  | 3,113  | 5,952  | 8,071  | 10,493 | 13,326 | 13,848 |
| <i>Mobile display</i>                                  | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| <i>Mobile classified</i>                               | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| <i>Mobile search</i>                                   | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |

Source: Zenith

## Mobile as % of total adspend



Mexico's mobile market will grow 30% this year. The main mobile providers are Telcel (72% of the market), Telefónica Movistar (16%), AT&T (6%) and Unefon (4%). Around one third of Mexican internet users access the internet exclusively via mobile devices.

We see a growing base of geo-referenced data, mobile DMPs based on SDKs and some linked to physical beacons. Context and targeting based on real world behaviour will grow significantly.

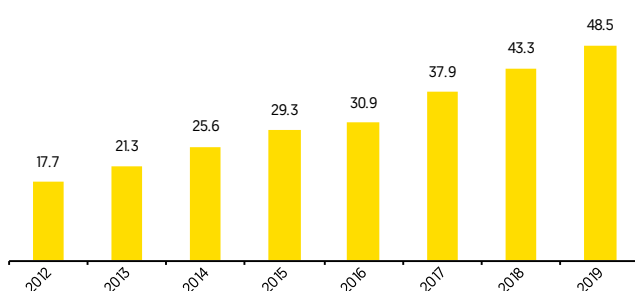
Mobile participation in Mexico continues to grow this year as the options for those using them have increased, i.e. having options to pay anywhere in the cell, as already happens in other countries, including Japan. Augmented reality will be an important factor in 2017 and beyond.

# Netherlands

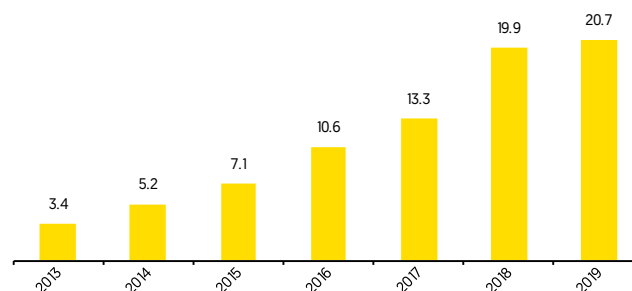
|                                                        | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  | 2019  |
|--------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Smartphone penetration [%]                             | 32.0  | 45.0  | 58.0  | 67.0  | 76.0  | 80.0  | 83.0  | 89.4  | 93.9  | 97.6  |
| Tablet penetration [%]                                 | 10.0  | 14.5  | 34.0  | 53.5  | 62.0  | 65.0  | 67.0  | 74.0  | 77.7  | 84.7  |
| Internet - Average daily minutes of consumption        | -     | -     | 254   | 268   | 273   | 283   | 278   | 301   | 323   | 341   |
| Mobile internet - Average daily minutes of consumption | -     | -     | 45    | 57    | 70    | 83    | 86    | 114   | 140   | 165   |
| % of average daily internet consumption via mobile     | -     | -     | 17.7  | 21.3  | 25.6  | 29.3  | 30.9  | 37.9  | 43.3  | 48.5  |
| Total advertising expenditure [€ m]                    | 3,936 | 3,968 | 3,781 | 3,654 | 3,730 | 3,755 | 3,850 | 4,000 | 4,256 | 4,479 |
| % of programmatic adspend going to mobile              | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| % of Total adspend delivered via mobile                | -     | -     | -     | 3.4   | 5.2   | 7.1   | 10.6  | 13.3  | 19.9  | 20.7  |
| Adspend delivered via mobile devices [€ m]             | -     | -     | -     | 126   | 196   | 268   | 410   | 531   | 848   | 927   |
| Mobile display                                         | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| Mobile classified                                      | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| Mobile search                                          | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |

Source: Zenith, Nielsen, GfK, GWI

Mobile as % of daily internet consumption



Mobile as % of total adspend



The principal mobile suppliers (along with sub renters of their network) are KPN (Youfone, Simyo, Telfort), T-Mobile (Tele2, Ben, Simpel) and Vodafone (Ziggo, Hollandse Nieuwe). KPN and Vodafone/ Ziggo account for between 40% and 45% of the market. Mobile data usage leapt from 115 billion Mb to 185 billion Mb between 2015 and 2016. The 2017 figures will probably show even more explosive growth in the use of the internet, because the providers have been competing on offering unlimited/large data packages this year.

We are seeing more and more of the so-called 097 numbers, mobile SIM cards for internet-of-things or applications that require their own mobile number, like smoke detectors and alarm systems. There are now more than four million in circulation.

Fast internet has become the standard both in mobile and at home. According to the ACM, only 2% of home internet connections are slower than 10 Mb per second and one in three is already over 100 Mb per second.

A few years ago, reach and use of smartphones and tablets were much lower than that of desktops and laptops. Nowadays, however, almost everyone in the Netherlands has at least one smartphone and often also access to a tablet. This is particularly noticeable among the young, many of whom use mobile to the exclusion of other devices. Desktop computers are becoming more and more identified solely with the workplace.

According to research agency GfK, 49% of 13-19 year olds watch video services via a mobile device. Smartphones are not just used for second-screen info seeking/social networking anymore but as a first screen in their own right. This development is, of course, due to the digitalization of TV offers and new providers like Netflix, Videoland, KPN Play and T-Mobile's recently launched KNIPPR. Within the Netherlands, progress is being hampered, however, by the fact that the sole cable provider Ziggo does not offer internet without television. This means that in order to take advantage of fast internet services, many Dutch are obliged to take an old-fashioned television package as well. Even so, in the coming years, we will be consuming more and more video on smartphones and tablets.

Social networks are including more video and ads placed here often show good results for advertisers. Rich media in display advertising is under pressure, partly due to the advent of adblockers on mobile. Branding budgets, which are often invested on TV, will therefore shift to online video over the next few years. A large part of it will be mobile through YouTube and Facebook, for example.

Progressive web apps (PWA) are websites that can behave like an app, for example, by sending push notifications and partly working offline. Deeplinking in apps from both Google Play and iOS makes apps less isolated. Content can be indexed in search engines and through deeplinks the user can land directly in the right place in the app. With the recently announced Instant Apps, Google will only download the components of an app that the user needs now, so that the entire app does not need to be

downloaded first, but the user can get started right away. Apps and the mobile web are moving towards each other in various ways.

Also on the advertisers and desk side, 'mobile' is changing. Two years ago, most advertisers ran a mobile campaign next to their regular campaign. The systems, measurements, ad formats and goals were separated and the budgets for mobile were often individually specified. Now, we see many advertisers set up multiscreen campaigns.

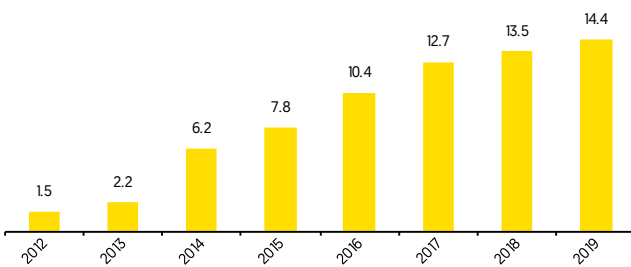
There are many challenges on the measurement side, even though measuring crossdevice behaviour is less difficult than a few years ago. Over the next few years, this will continue to evolve, and advertisers will generally develop all campaigns for all screens and formats so that the message is consistent across all screens.

# New Zealand

|                                                        | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  | 2019  |
|--------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Smartphone penetration (%)                             | 9.9   | 41.2  | 45.1  | 50.0  | 60.0  | 70.0  | 73.5  | 77.2  | 81.0  | 85.1  |
| Tablet penetration (%)                                 | -     | 2.8   | 8.6   | 18.8  | 20.7  | 22.8  | 25.0  | 27.6  | 30.3  | 33.3  |
| Internet - Average daily minutes of consumption        | 68    | 70    | 83    | 90    | 100   | 128   | 131   | 141   | 152   | 163   |
| Mobile internet - Average daily minutes of consumption | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| % of average daily internet consumption via mobile     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| Total advertising expenditure (NZD m)                  | 2,029 | 2,074 | 2,065 | 2,176 | 2,271 | 2,349 | 2,465 | 2,542 | 2,630 | 2,721 |
| % of programmatic adspend going to mobile              | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| % of Total adspend delivered via mobile                | -     | 0.03  | 1.5   | 2.2   | 6.2   | 7.8   | 10.4  | 12.7  | 13.5  | 14.4  |
| Adspend delivered via mobile devices (NZD m)           | -     | 1     | 31    | 47    | 142   | 183   | 257   | 324   | 356   | 391   |
| <i>Mobile display</i>                                  | -     | 1     | 3     | 6     | 12    | 15    | 37    | 63    | 69    | 76    |
| <i>Mobile classified</i>                               | -     | -     | -     | -     | 27    | 43    | 62    | 80    | 88    | 96    |
| <i>Mobile search</i>                                   | -     | -     | 28    | 41    | 103   | 125   | 158   | 181   | 199   | 219   |

Source: Zenith

## Mobile as % of total adspend



Three mobile service providers currently dominate the New Zealand market. Two claim near equal shares: Vodafone with 38% and Spark (Telecom NZ) with 37%; another local carrier, 2Degrees, has 24%. The battle for share has seen the introduction of unlimited data plans from Vodafone and 2Degrees, with Spark expected to follow.

There is 77% smartphone penetration, of which Android devices make up 53% followed by IOS with 38% and Windows 7%. Users spend over an hour a day using the internet on their smartphones and 83% of time is spent on mobile apps. 85% of in-app advertising is mobile banners 320x50 and full page interstitials 320x480. The m-site experience adds the MREC 300x250 to mobile banners.

Connecting at speeds of 7 MBps, users skew younger with over half under 39 years and 20% under 14 years. While it continues throughout the week and alongside other devices, mobile traffic peaks on Wednesdays and Fridays. Entertainment, games and social networking occupy 37% of mobile content viewed.

Google's use of mobile UX in ranking is helping to drive mobile-specific content. The rise of social and native is increasing investment in more organic formats.

# Peru

|                                                        | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  | 2019  |
|--------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Smartphone penetration [%]                             | 6.0   | 5.0   | 8.0   | 12.0  | 26.0  | 34.0  | 55.0  | 65.0  | 70.0  | 73.0  |
| Tablet penetration [%]                                 | 0.0   | 0.0   | 3.0   | 4.9   | 9.6   | 10.7  | 15.0  | 18.0  | 20.0  | 22.0  |
| Internet - Average daily minutes of consumption        | 97    | 98    | 99    | 110   | 122   | 124   | 142   | 159   | 175   | 192   |
| Mobile internet - Average daily minutes of consumption | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| % of average daily internet consumption via mobile     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| Total advertising expenditure [PEN m]                  | 1,452 | 1,639 | 1,741 | 1,932 | 2,145 | 2,296 | 2,481 | 2,528 | 2,635 | 2,722 |
| % of programmatic adspend going to mobile              | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| % of Total adspend delivered via mobile                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| Adspend delivered via mobile devices [PEN m]           | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| <i>Mobile display</i>                                  | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| <i>Mobile classified</i>                               | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| <i>Mobile search</i>                                   | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |

Source: TGI Lima, Ola I 2017, Zenith

The main service providers in Peru are Telefonica, Claro, Entel, Bitel and Virgin. Around 55% of the population use mobile devices.

The mobile ad formats most commonly used are display, video, social and geolocation.

Mobile internet use is complementing the consumption of other media, not replacing it. Mobile advertising can work well with and support advertising in other media.

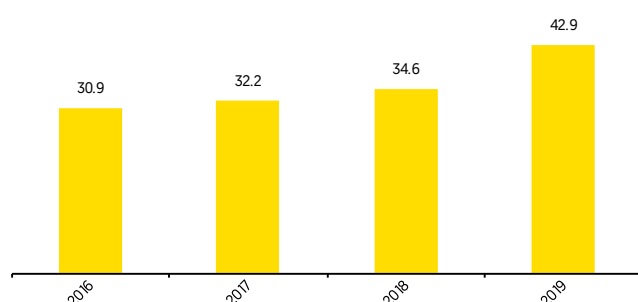
The use of messaging platforms (such as WhatsApp and Facebook Messenger) and video platforms (such as YouTube and Snapchat) is ever more common.

Augmented reality promises to provide new opportunities to communicate engagingly with consumers.

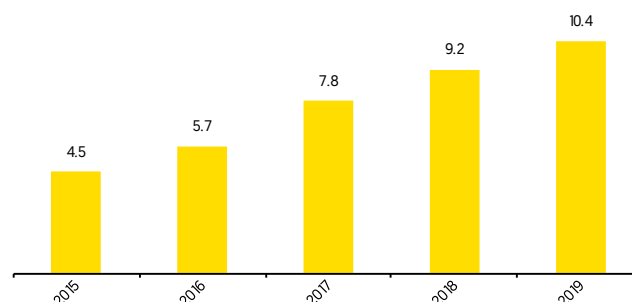
|                                                        | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  | 2019  |
|--------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Smartphone penetration [%]                             | -     | -     | -     | 22.6  | 30.4  | 49.1  | 56.5  | 61.6  | 64.0  | 65.3  |
| Tablet penetration [%]                                 | -     | -     | -     | -     | 18.5  | 24.2  | 26.2  | 28.0  | 28.6  | 29.2  |
| Internet - Average daily minutes of consumption        | -     | -     | -     | -     | -     | -     | 110   | 121   | 130   | 140   |
| Mobile internet - Average daily minutes of consumption | -     | -     | -     | -     | -     | -     | 34    | 39    | 45    | 60    |
| % of average daily internet consumption via mobile     | -     | -     | -     | -     | -     | -     | 30.9  | 32.2  | 34.6  | 42.9  |
| Total advertising expenditure [PLN m]                  | 7,000 | 7,141 | 6,747 | 6,392 | 6,545 | 6,729 | 6,908 | 7,055 | 7,218 | 7,387 |
| % of programmatic adspend going to mobile              | -     | -     | -     | -     | 0.04  | 0.1   | 0.1   | 0.2   | 0.3   | 0.3   |
| % of Total adspend delivered via mobile                | -     | -     | -     | -     | -     | 4.5   | 5.7   | 7.8   | 9.2   | 10.4  |
| Adspend delivered via mobile devices [PLN m]           | -     | -     | -     | -     | -     | 306   | 394   | 548   | 663   | 771   |
| <i>Mobile display</i>                                  | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| <i>Mobile classified</i>                               | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| <i>Mobile search</i>                                   | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |

Source: Zenith, Gemius - PBI Audience, TGI/Millward Brown

*Mobile as % of daily internet consumption*



*Mobile as % of total adspend*



The Polish mobile market is growing – 62% of Poles own a smartphone and almost a third [32.2%] of internet traffic is done on mobile devices [Gemius PBI]. Smartphones are most popular among young people [18-34 year-olds], who both own them and use them more extensively than older groups do. Older people [65+] tend to use their phones and smartphones just to make calls and send texts.

It is not only the number of people using mobile in Poland that is increasing – marketers' advertising spend is going up too. There is still a discrepancy between the share of internet traffic travelling via mobile [45.8%] and the percentage of ad money spent there [27% in H1 2017, up from 22% in 2016] but we expect these two figures to be much closer together in the future.

Android rules in Poland – 82.9% of mobile traffic is done by Android devices [Samsung is the most popular manufacturer]. iOS is responsible for 13.2% of traffic and Windows Phone is around 4%. The top 10 mobile apps in Poland are mainly apps from Facebook [FB, Messenger, Instagram, WhatsApp] and Google [YouTube, Maps, Gmail] as well as Snapchat and two Polish shopping apps – Allegro and OLX.

Polish mobile users also use other video apps – Player.pl [by top TV channel TVN] and Ipla [by Polsat].

Advertising expenditure is in line with how users use their mobile devices – social media (Facebook) and Google products are taking a big share of both (money & time). We also see marketers using display campaigns (with the growing role of programmatic buying for mobile – it is estimated to be 20% of all programmatic buying, up from 13% last year) and video. Most campaigns are cross-device ones so they run on desktop and mobile at the same time.

We see the growing role of data about users used to plan and buy campaigns. This can be seen in share of spend for programmatic buying but also in products offered by

mobile inventory providers. Mobile ad networks and digital publishers are working on adding data about users instead just serving ads to everyone who visits their site or uses an app. Not everyone is doing it yet, but we can see that this part of the market is developing.

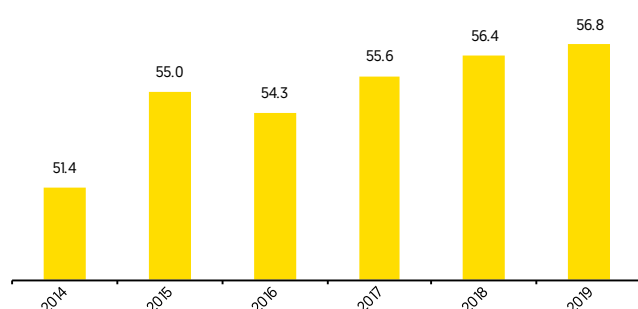
There is one obstacle that could influence the way campaigns and activities are going to be planned in the future – GDPR (General Data Protection Regulations) that will come into effect in May 2018. We do not yet know what effects this will have but will be keeping a close eye on developments.

# Romania

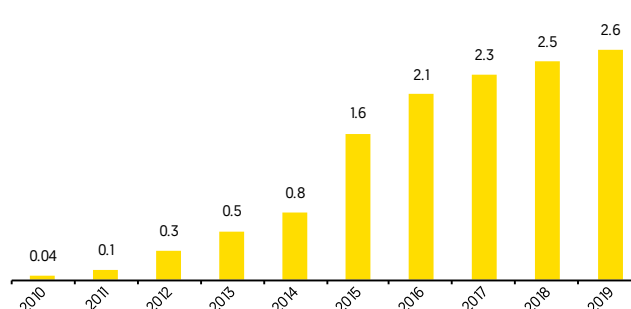
|                                                        | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|--------------------------------------------------------|------|------|------|------|------|------|------|------|------|------|
| Smartphone penetration (%)                             | -    | -    | 12.0 | 28.0 | 34.0 | 46.0 | 53.0 | 57.0 | 59.0 | 59.0 |
| Tablet penetration (%)                                 | -    | -    | 3.0  | 6.0  | 13.0 | 23.0 | 24.0 | 25.0 | 25.0 | 25.0 |
| Internet - Average daily minutes of consumption        | 191  | 209  | 217  | 242  | 280  | 298  | 293  | 293  | 305  | 308  |
| Mobile internet - Average daily minutes of consumption | -    | -    | -    | -    | 144  | 164  | 159  | 163  | 172  | 175  |
| % of average daily internet consumption via mobile     | -    | -    | -    | -    | 51.4 | 55.0 | 54.3 | 55.6 | 56.4 | 56.8 |
| Total advertising expenditure (€ m)                    | 345  | 331  | 297  | 288  | 299  | 320  | 362  | 409  | 443  | 470  |
| % of programmatic adspend going to mobile              | -    | -    | -    | -    | 0.1  | 0.3  | 0.5  | 0.6  | 0.7  | 0.7  |
| % of Total adspend delivered via mobile                | 0.04 | 0.1  | 0.3  | 0.5  | 0.8  | 1.6  | 2.1  | 2.3  | 2.5  | 2.6  |
| Adspend delivered via mobile devices (€ m)             | 0.2  | 0.4  | 1.0  | 1.6  | 2.3  | 5.3  | 7.5  | 9.4  | 10.9 | 12.2 |
| <i>Mobile display</i>                                  | 0.1  | 0.2  | 0.6  | 0.8  | 1.0  | 2.1  | 2.7  | 4.2  | 4.8  | 5.6  |
| <i>Mobile classified</i>                               | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| <i>Mobile search</i>                                   | 0.04 | 0.2  | 0.4  | 0.8  | 1.3  | 3.2  | 4.9  | 5.3  | 6.0  | 6.6  |

Source: SNA Focus - CAPI Questionnaire measurement. Universe: 14-74 Urban, Google Consumer Barometer (Romania), Zenith

*Mobile as % of daily internet consumption*



*Mobile as % of total adspend*



Telekom, Orange and Vodafone are the main mobile providers in Romania.

The youngest users more often use smartphones, whereas in the middle-aged group tablets are used more often. Classic ad formats are most common, followed by video, which we expect will grow fast in the near future.

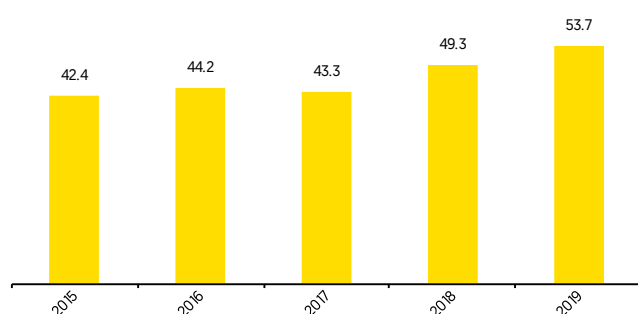
Mobile consumption is growing, both in terms of time spent and reach (over 50% of time spent online is via mobile, and over 50% of sites' traffic is from mobile devices [65% in April 2017], bringing an additional audience, complementary to non-mobile consumption. Programmatic is becoming more important.

# Russia

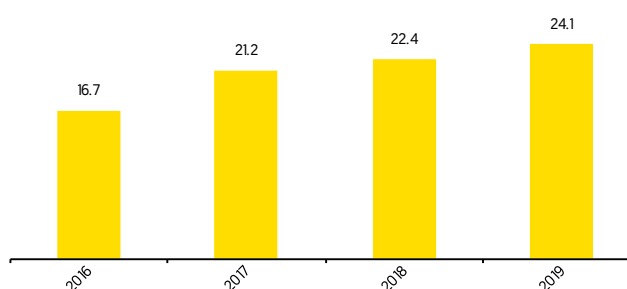
|                                                        | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    | 2019    |
|--------------------------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Smartphone penetration (%)                             | -       | 17.2    | 23.2    | 32.9    | 44.8    | 53.9    | 59.5    | 68.5    | 75.4    | 79.1    |
| Tablet penetration (%)                                 | -       | -       | -       | -       | -       | 21.0    | 21.9    | 23.7    | 23.7    | 23.7    |
| Internet - Average daily minutes of consumption        | -       | -       | -       | -       | -       | 246     | 241     | 245     | 248     | 250     |
| Mobile internet - Average daily minutes of consumption | -       | -       | -       | -       | -       | 104     | 107     | 106     | 122     | 135     |
| % of average daily internet consumption via mobile     | -       | -       | -       | -       | -       | 42.4    | 44.2    | 43.3    | 49.3    | 53.7    |
| Total advertising expenditure (RUB m)                  | 207,300 | 252,137 | 286,381 | 317,857 | 331,610 | 302,280 | 331,850 | 373,627 | 415,307 | 453,031 |
| % of programmatic adspend going to mobile              | -       | -       | -       | -       | -       | -       | -       | -       | -       | -       |
| % of Total adspend delivered via mobile                | -       | -       | -       | -       | -       | -       | 16.7    | 21.2    | 22.4    | 24.1    |
| Adspend delivered via mobile devices (RUB m)           | -       | -       | -       | -       | -       | -       | 55,391  | 79,283  | 93,155  | 109,250 |
| <i>Mobile display</i>                                  | -       | -       | -       | -       | -       | -       | 3,589   | 5,656   | 8,484   | 11,877  |
| <i>Mobile classified</i>                               | -       | -       | -       | -       | -       | -       | -       | -       | -       | -       |
| <i>Mobile search</i>                                   | -       | -       | -       | -       | -       | -       | 51,802  | 73,628  | 84,672  | 97,372  |

Source: Zenith

*Mobile as % of daily internet consumption*



*Mobile as % of total adspend*



The main mobile services are provided by the local Mail Group (social networks Vk and OK, platform Mail.ru), search engines Google and local Yandex, messengers WhatsApp and Viber, and social network Instagram and video hosting site YouTube.

Smartphones are very popular among Russians, with almost 70% penetration. Its profile is slightly skewed to youth.

The types of advertising mobile devices are most commonly used for include:

1. Applications installed to increase the amount of downloads (CPA model)

2. Video ads to drive brand metrics (similar to desktop branding, CPM)
3. Native ads in social networks

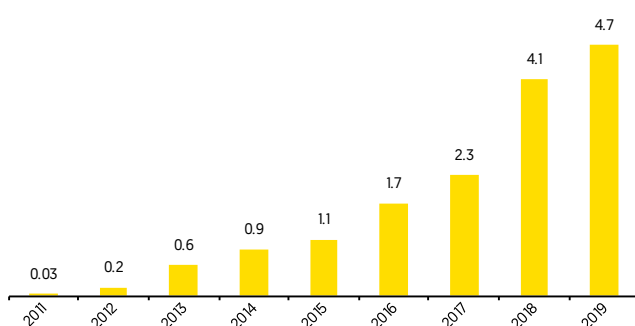
Measurements are not exact, which we think leads to an underestimation of mobile ads. During the next few years, we expect mobile e-commerce and video ads to grow off the back of increasing mobile consumption and further developments in technology.

Virtual and augmented reality, and biometric interface (voice search, face recognition) are gaining in importance.

|                                                        | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   | 2019   |
|--------------------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Smartphone penetration [%]                             | 19.0   | 24.0   | 29.0   | 32.0   | 38.0   | 47.7   | 60.4   | 65.5   | 68.0   | 70.1   |
| Tablet penetration [%]                                 | -      | -      | 0.5    | 5.0    | 10.0   | 16.0   | 24.7   | 31.2   | 35.2   | 37.5   |
| Internet - Average daily minutes of consumption        | -      | -      | 110    | 116    | 138    | 152    | 96     | 106    | 113    | 121    |
| Mobile internet - Average daily minutes of consumption | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| % of average daily internet consumption via mobile     | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| Total advertising expenditure [RSD m]                  | 18,025 | 17,646 | 19,665 | 18,329 | 18,329 | 21,558 | 21,558 | 24,250 | 25,856 | 26,801 |
| % of programmatic adspend going to mobile              | -      | -      | -      | -      | -      | 24     | 29     | 30     | 27     | 26     |
| % of Total adspend delivered via mobile                | 0.0    | 0.0    | 0.2    | 0.6    | 0.9    | 1.1    | 1.7    | 2.3    | 4.1    | 4.7    |
| Adspend delivered via mobile devices [RSD m]           | 1      | 5      | 30     | 106    | 159    | 227    | 375    | 550    | 1,050  | 1,262  |
| <i>Mobile display</i>                                  | 1      | 4      | 23     | 81     | 120    | 171    | 282    | 414    | 790    | 925    |
| <i>Mobile classified</i>                               | -      | -      | -      | -      | 1      | 2      | 4      | 5      | 10     | 17     |
| <i>Mobile search</i>                                   | -      | 1      | 7      | 25     | 38     | 54     | 89     | 131    | 250    | 320    |

Source: Brand Puls, Zenith, IAB Serbia

## Mobile as % of total adspend



Serbia has three mobile service providers - two international companies, and one domestic one, which developed from the previously existing public telecommunications company. These are:

- Telenor [100% owned by Telenor Group]
- Vip Mobile [100% owned by Telekom Austria]
- MTS - Mobile Telephony of Serbia [100% owned by Telekom Srbija]

With penetration of 130.76% and steady growth of 2% per year, over 90% of people use mobile phones. Smartphone penetration is at around 66% and is growing significantly.

Both sexes are equally represented in the mobile phone-using population, which nevertheless skews slightly towards high-school educated, younger people living in the northern regions of the country and in urban areas.

Display is still the dominant type of mobile advertising, especially on local news/portal applications.

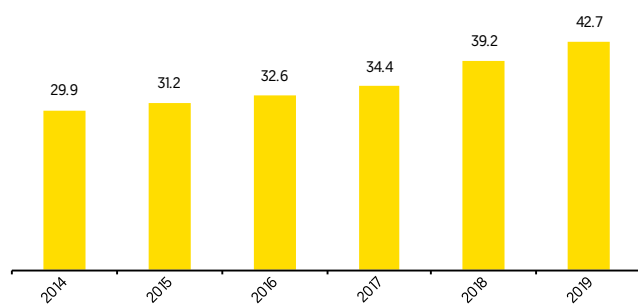
Programmatic advertising has been available since the end of 2015.

# Singapore

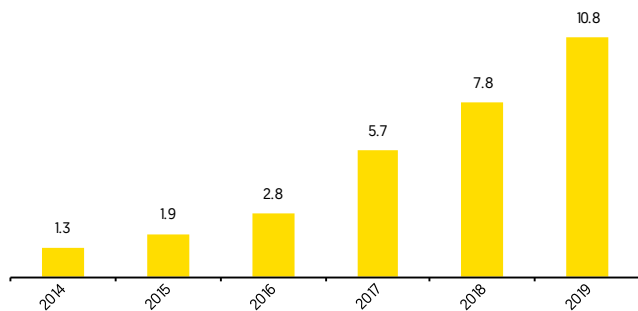
|                                                        | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  | 2019  |
|--------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Smartphone penetration (%)                             | 65.0  | 68.0  | 70.0  | 72.0  | 77.0  | 82.5  | 83.0  | 84.0  | 85.0  | 85.7  |
| Tablet penetration (%)                                 | 5.0   | 10.0  | 17.0  | 40.0  | 47.0  | 49.4  | 50.8  | 52.4  | 53.2  | 54.3  |
| Internet - Average daily minutes of consumption        | -     | -     | -     | -     | 378   | 378   | 377   | 419   | 431   | 436   |
| Mobile internet - Average daily minutes of consumption | -     | -     | -     | -     | 113   | 118   | 123   | 144   | 169   | 186   |
| % of average daily internet consumption via mobile     | -     | -     | -     | -     | 29.9  | 31.2  | 32.6  | 34.4  | 39.2  | 42.7  |
| Total advertising expenditure (\$\$ m)                 | 2,304 | 2,489 | 2,440 | 2,688 | 2,608 | 2,665 | 2,507 | 2,286 | 2,439 | 2,622 |
| % of programmatic adspend going to mobile              | -     | -     | -     | -     | 18.0  | 29.0  | 42.0  | 48.0  | 50.0  | 53.0  |
| % of Total adspend delivered via mobile                | -     | -     | -     | -     | 1.3   | 1.9   | 2.8   | 5.7   | 7.8   | 10.8  |
| Adspend delivered via mobile devices (\$\$ m)          | -     | -     | -     | -     | 34    | 51    | 71    | 130   | 191   | 282   |
| Mobile display                                         | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| Mobile classified                                      | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| Mobile search                                          | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |

Source: Zenith

Mobile as % of daily internet consumption



Mobile as % of total adspend



Singapore continues to be a leading Asian nation in mobile, with smartphone penetration of around 84% and tablet around 52%. Multi-device ownership and second screening activity means that Singaporeans are spending an increased amount of time online and on mobile.

Consumers are also spending more time on their mobile device as data becomes cheaper. Singapore has just introduced a fourth telco – Circles Life – to disrupt the telecommunications oligopoly of Singtel, Starhub and M1 and further encourage mobile usage.

The rise of the mobile device has had a significant impact on traditional media like press, TV and radio. Mobile news consumption has increased with Singaporeans spending close to 45 minutes daily on online press. The rise of content providers like Netflix and Viu, coupled with the ease of downloading video onto mobile, has significantly affected

viewership of traditional TV. Similarly, music streaming services like Spotify and the use of mobile as the primary music device has reduced the listenership of traditional radio, particularly for the younger millennials.

The mobile penetration rate is very high, so the overall numbers of devices and mobile users are unlikely to grow significantly in the near term. The push for better mobile infrastructure is likely to drive an increase in time spent on mobile, to the detriment of traditional media channels.

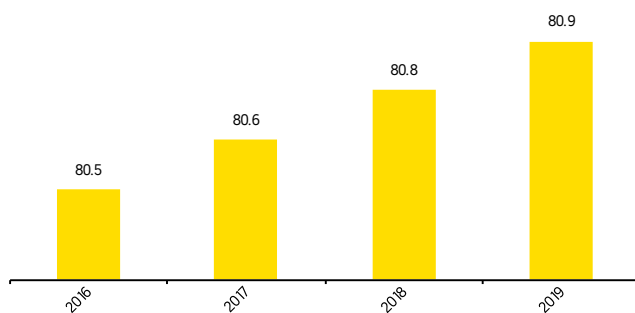
While the audience has evolved its media consumption patterns, advertising budgets have so far lagged in terms of growth. With improved third-party data, increased adoption of programmatic trading and increased awareness from clients, investment on mobile platforms is likely to grow significantly in the near term.

|                                                        | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  | 2019  |
|--------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Smartphone penetration (%)                             | 37.6  | 51.0  | 65.8  | 78.2  | 86.7  | 87.0  | 87.7  | 88.2  | 88.9  | 89.0  |
| Tablet penetration (%)                                 | -     | -     | 11.9  | 24.7  | 31.8  | 32.0  | 32.5  | 32.7  | 33.0  | 33.2  |
| Internet - Average daily minutes of consumption        | 57    | 63    | 73    | 90    | 100   | 103   | 128   | 129   | 130   | 131   |
| Mobile internet - Average daily minutes of consumption | -     | -     | -     | -     | -     | -     | 103   | 104   | 105   | 106   |
| % of average daily internet consumption via mobile     | -     | -     | -     | -     | -     | -     | 80.5  | 80.6  | 80.8  | 80.9  |
| Total advertising expenditure (€ m)                    | 5,870 | 5,505 | 4,630 | 4,261 | 4,744 | 5,054 | 5,274 | 5,429 | 5,738 | 6,089 |
| % of programmatic adspend going to mobile              | -     | -     | -     | 2.4   | 6.0   | 18.0  | 34.0  | 50.0  | 55.0  | 60.0  |
| % of Total adspend delivered via mobile                | -     | -     | -     | 1.6   | 2.0   | 2.8   | 3.0   | 4.0   | 4.6   | 4.9   |
| Adspend delivered via mobile devices (€ m)             | -     | -     | -     | 68    | 95    | 140   | 160   | 217   | 263   | 300   |
| Mobile display *                                       | -     | -     | -     | 68    | 86    | 102   | 120   | 160   | 187   | 213   |
| Mobile classified                                      | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| Mobile search                                          | -     | -     | -     | -     | 9     | 38    | 40    | 58    | 77    | 87    |

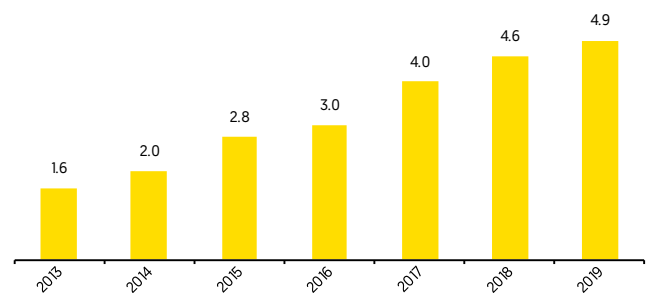
Source: Zenith

\* includes classified

Mobile as % of daily internet consumption



Mobile as % of total adspend



In Spain, the main mobile service provider is Movistar, followed by Vodafone. Based on CNMC's 2016 report, Movistar had a market share of 31.8%, almost one point less than in the previous year. Meanwhile Vodafone (30.9%) increased its market share by more than two points due to the company's acquisition of Ono. In third position is Orange, with a market share of 18.3%.

Mobile device use is very extensive among the Spanish population [94.1%]. People who use mobile devices to access the internet are more likely to be under 44 years old [55.3% lx 102 vs total internet users] and of high and middle social class [70.5% lx 100 vs total internet users].

Mobile ads are much like desktop ads, adjusted to the mobile device's features. Integrated ads, interstitials, interactive ads or video ads are the most commonly used. Nevertheless, smartphones are very personal devices where social networks and Instant Messaging are our preferred daily activities, so native content is gaining momentum.

Internet access is changing. Since 2014, mobile has been the dominant device for accessing the internet [94.8% of internet users use mobile devices], and it is growing year by year while internet PC/laptop access is decreasing.

Instagram Stories has been one of the most disruptive products last year; it is not only threatening its main competitor Snapchat's position, but has also boosted Instagram's audience itself. Many brands and influencers are using Instagram Stories successfully; it is now possible for brands to lead the customer to a purchase by swiping up over their stories.

Live chat bots constitute one of the top trends and will play a key role in brand interactions with customers, as AI is becoming more sophisticated every year. On the other hand, voice assistants are becoming standard for mobile users to interact with their environment, not only in smartphones or tablets but in other contexts too; home voice assistants, such as Amazon Echo or Google Home, are growing fast.

WhatsApp Business is coming soon; it is an app that works separately from the regular one. It will allow companies and customers to connect in a professional setting. Companies will have to pay to have an account, while the customers will have it for free.

Adblockers are a growing problem. According to the AIMC study *Navegantes en la red*, six out of 10 users - especially millennials - claimed to use adblockers during Q4 2016. Google now integrates a new adblocker in its beta Android Chrome Canary navigator.

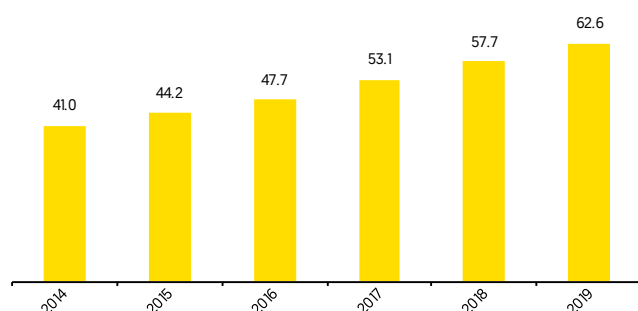
# Sweden

|                                                        | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   | 2019   |
|--------------------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Smartphone penetration [%]                             | 36.0   | 52.0   | 50.4   | 63.9   | 72.0   | 77.2   | 80.6   | 81.7   | 83.0   | 84.2   |
| Tablet penetration [%]                                 | -      | -      | -      | 35.0   | 50.1   | 57.4   | 58.4   | 57.4   | 57.0   | 57.0   |
| Internet - Average daily minutes of consumption        | 79     | 83     | 84     | 88     | 122    | 125    | 133    | 134    | 137    | 139    |
| Mobile internet - Average daily minutes of consumption | -      | -      | -      | -      | 50     | 55     | 63     | 71     | 79     | 87     |
| % of average daily internet consumption via mobile     | -      | -      | -      | -      | 41.0   | 44.2   | 47.7   | 53.1   | 57.7   | 62.6   |
| Total advertising expenditure [SEK m]                  | 23,088 | 24,756 | 24,693 | 24,508 | 25,327 | 26,580 | 28,969 | 31,973 | 34,040 | 35,562 |
| % of programmatic adspend going to mobile              | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| % of Total adspend delivered via mobile                | 0.3    | 0.8    | 2.1    | 4.4    | 7.0    | 10.3   | 15.8   | 9.2    | 10.5   | 11.3   |
| Adspend delivered via mobile devices [SEK m]           | 63     | 189    | 517    | 1,083  | 1,777  | 2,736  | 4,575  | 2,949  | 3,567  | 4,004  |
| Mobile display                                         | 63     | 189    | 517    | 1,083  | 603    | 819    | 1,041  | 1,200  | 1,380  | 1,501  |
| Mobile classified*                                     | -      | -      | -      | -      | 1,174  | 1,917  | 3,534  | 1,750  | 2,187  | 2,503  |
| Mobile search                                          | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |

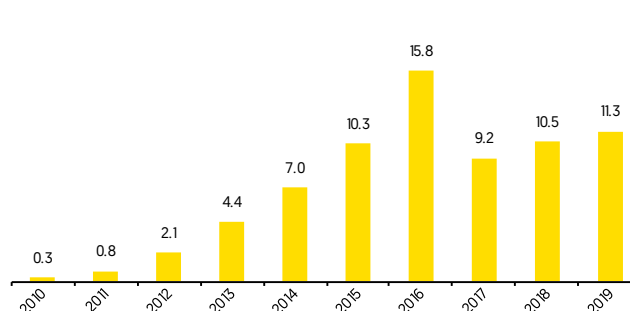
Source: TNS Sifo Orvesto Konsument base:1, IRM

\* includes mobile classified, search and social

Mobile as % of daily internet consumption



Mobile as % of total adspend



The top mobile providers are Telia [24.7% of the market], Tele2 [13.5%] and Telenor [12.1%].

Men use desktops more than women and tablets slightly more. Total consumption of mobile internet is the same for men and women, though. Mobile internet consumption is higher among younger people; daily usage is 90% among 16-29-year-olds and only 38% for those aged 60-80.

We use mobile most to drive reach and awareness in networks and programmatic. The KPIs tend to focus on viewability and engagement [VTR/swipes/drop rate etc.].

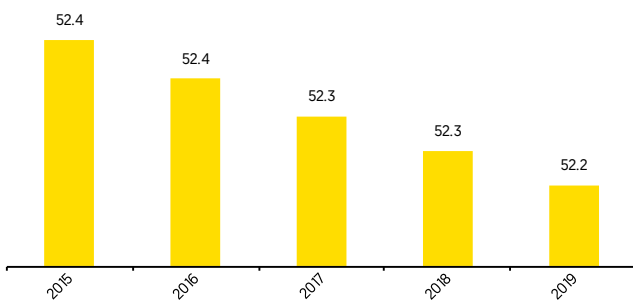
New trends we are seeing include the increased popularity of 360 videos and banners. These enable advertisers to convert leads directly in the banner so the user does not have to leave the site they are visiting. Also Geofencing, which reaches only certain people within a specific area.

# Switzerland

|                                                        | 2010  | 2011  | 2012  | 2013  | 2014  | 2015  | 2016  | 2017  | 2018  | 2019  |
|--------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Smartphone penetration [%]                             | -     | 34.0  | 43.0  | 54.0  | 65.0  | 70.0  | 72.0  | 75.0  | 77.0  | 79.0  |
| Tablet penetration [%]                                 | -     | 5.9   | 8.6   | 23.0  | 39.0  | 43.0  | 46.0  | 49.0  | 52.0  | 54.0  |
| Internet - Average daily minutes of consumption        | -     | -     | -     | -     | -     | 82    | 84    | 86    | 88    | 90    |
| Mobile internet - Average daily minutes of consumption | -     | -     | -     | -     | -     | 43    | 44    | 45    | 46    | 47    |
| % of average daily internet consumption via mobile     | -     | -     | -     | -     | -     | 52.4  | 52.4  | 52.3  | 52.3  | 52.2  |
| Total advertising expenditure (CHF m)                  | 4,900 | 5,207 | 5,358 | 5,390 | 5,565 | 5,740 | 5,871 | 5,937 | 6,028 | 6,146 |
| % of programmatic adspend going to mobile              | -     | -     | -     | -     | -     | 4.0   | 20.0  | 31.0  | 42.0  | 50.0  |
| % of Total adspend delivered via mobile                | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| Adspend delivered via mobile devices (CHF m)           | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| <i>Mobile display</i>                                  | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| <i>Mobile classified</i>                               | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| <i>Mobile search</i>                                   | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |

Source: IGEI digiMonitor/Time Use study/Zenith/DBM

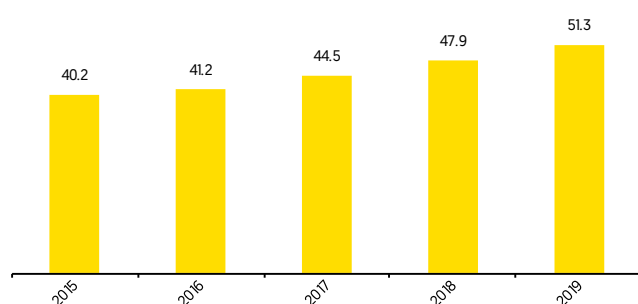
## Mobile as % of daily internet consumption



|                                                        | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   | 2019   |
|--------------------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Smartphone penetration [%]                             | 7.6    | 15.0   | 27.4   | 45.3   | 62.8   | 70.8   | 84.8   | 89.0   | 93.0   | 95.0   |
| Tablet penetration [%]                                 | -      | 4.4    | 8.6    | 15.9   | 21.9   | 38.2   | 36.8   | 34.0   | 34.0   | 34.0   |
| Internet - Average daily minutes of consumption        | 169    | 167    | 169    | 198    | 213    | 371    | 419    | 434    | 447    | 460    |
| Mobile internet - Average daily minutes of consumption | -      | -      | -      | -      | -      | 149    | 173    | 193    | 214    | 236    |
| % of average daily internet consumption via mobile     | -      | -      | -      | -      | -      | 40.2   | 41.2   | 44.5   | 47.9   | 51.3   |
| Total advertising expenditure (NT\$ m)                 | 58,299 | 60,451 | 57,667 | 59,752 | 60,921 | 61,042 | 62,552 | 63,339 | 65,354 | 67,513 |
| % of programmatic adspend going to mobile              | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| % of Total adspend delivered via mobile                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| Adspend delivered via mobile devices (NT\$ m)          | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| <i>Mobile display</i>                                  | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| <i>Mobile classified</i>                               | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| <i>Mobile search</i>                                   | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |

Source: Before 2015 Nielsen Media Index/2015 onwards GWI. Weighted by internet penetration from Media Index.

## Mobile as % of daily internet consumption



Three mobile service providers have dominated the Taiwanese market for a long time. Chunghwa Telecom is the largest mobile provider, with a 50% market share. Taiwan Mobile is second with 24%, followed by Far EasTone (19%). Targeting young consumers with lower-price packages, Taiwan Star Telecom entered the market in 2013 and has so far managed to attract 5% of customers.

Display and video ads are currently the mainstream mobile advertising types. Since social media is the most important platform for mobile usage, video ads might enjoy higher growth than display ads over the next few years.

Mobile internet daily consumption has increased by 4%, taking up 45% of total internet consumption. Meanwhile, daily consumption time on desktop decreased by 5%.

Apple Pay, Google Pay and Samsung Pay have become available this year. Six months in, these services combined already account for 26% of total electronic payments. Mobile service providers are seeking to grow their subscriber bases via improved service and new features, hand in hand with the emergence of 5G. This could bring new opportunities for mobile.

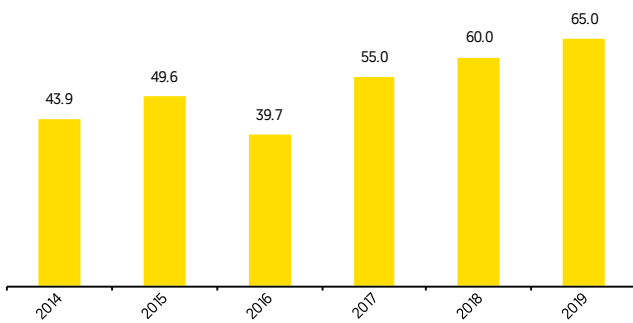
As new smart-city digital technologies are being adopted quickly in Taiwan, mobile connectivity is moving towards the Internet of Things. Taiwan has implemented many smart-city technologies in the transport and healthcare categories. These will enable data analytics to be implanted, further accelerating the arrival of the Internet of Things.

# Thailand

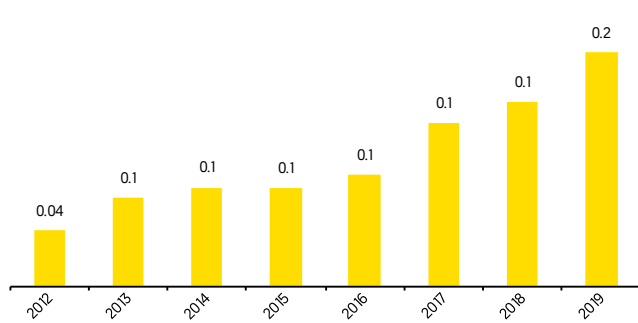
|                                                        | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    | 2019    |
|--------------------------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Smartphone penetration [%]                             | -       | -       | -       | -       | 28.2    | 44.4    | 48.0    | 52.6    | 56.0    | 60.0    |
| Tablet penetration [%]                                 | -       | -       | -       | -       | 3.7     | 3.4     | 2.8     | 1.0     | 1.0     | 0.5     |
| Internet - Average daily minutes of consumption        | 118     | 127     | 131     | 132     | 148     | 158     | 219     | 168     | 178     | 189     |
| Mobile internet - Average daily minutes of consumption | -       | -       | -       | -       | 65      | 79      | 87      | 92      | 107     | 123     |
| % of average daily internet consumption via mobile     | -       | -       | -       | -       | 43.9    | 49.6    | 39.7    | 55.0    | 60.0    | 65.0    |
| Total advertising expenditure (THB m)                  | 107,066 | 110,527 | 121,351 | 121,963 | 132,269 | 134,667 | 119,744 | 106,431 | 108,423 | 111,411 |
| % of programmatic adspend going to mobile              | -       | -       | -       | -       | -       | -       | -       | -       | -       | -       |
| % of Total adspend delivered via mobile                | -       | -       | 0.04    | 0.1     | 0.1     | 0.1     | 0.1     | 0.1     | 0.1     | 0.2     |
| Adspend delivered via mobile devices (THB m)           | -       | -       | 50.1    | 80.7    | 97.8    | 99.0    | 100.0   | 130.0   | 150.0   | 195.0   |
| <i>Mobile display</i>                                  | -       | -       | -       | -       | -       | -       | -       | -       | -       | -       |
| <i>Mobile classified</i>                               | -       | -       | -       | -       | -       | -       | -       | -       | -       | -       |
| <i>Mobile search</i>                                   | -       | -       | -       | -       | -       | -       | -       | -       | -       | -       |

Source: Zenith Thailand CMV 2017-03 (Jun16-Jul17)

*Mobile as % of daily internet consumption*



*Mobile as % of total adspend*



The main mobile carriers are AIS (Advanced Info Service plc), DTAC and TrueMove H.

The most common mobile ad formats are online video on Facebook and YouTube, Admob Network, and Mobile App Install Ad.

Mobile internet consumption is growing at the expense of all other media, including desktop. Mobile video viewing is displacing viewing of traditional TV.

New trends in mobile: beacon technology, Micromoment on Mobile (to convert the user the moment they search for information on their mobile device).

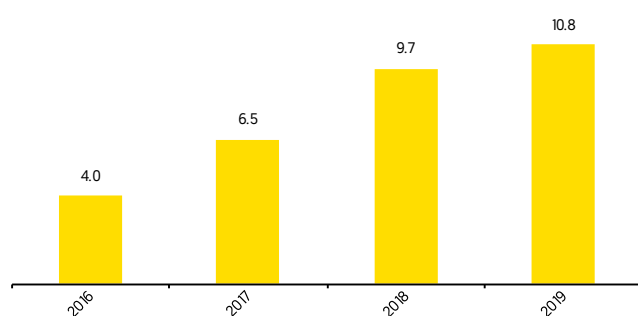
In future, the mobile device will be the consumer's central service platform, facilitating payments (through Line Pay and NFC), e-commerce, transit (Uber and Grab) and deliveries (Scooter, Line Man and Lalamove).

# Ukraine

|                                                        | 2010  | 2011  | 2012  | 2013   | 2014  | 2015  | 2016   | 2017   | 2018   | 2019   |
|--------------------------------------------------------|-------|-------|-------|--------|-------|-------|--------|--------|--------|--------|
| Smartphone penetration (%)                             | -     | 6.7   | 12.6  | 17.5   | 25.4  | 28.7  | 33.8   | 41.6   | 52.6   | 70.4   |
| Tablet penetration (%)                                 | -     | 1.0   | 1.9   | 4.5    | 9.5   | 13.4  | 14.2   | 16.1   | 19.3   | 21.9   |
| Internet - Average daily minutes of consumption        | 39    | 49    | 56    | 60     | 66    | 68    | 73     | 79     | 85     | 90     |
| Mobile internet - Average daily minutes of consumption | -     | -     | -     | -      | -     | -     | -      | -      | -      | -      |
| % of average daily internet consumption via mobile     | -     | -     | -     | -      | -     | -     | -      | -      | -      | -      |
| Total advertising expenditure (UAH m)                  | 5,639 | 6,157 | 8,940 | 11,230 | 8,979 | 9,159 | 11,354 | 14,592 | 17,525 | 20,900 |
| % of programmatic adspend going to mobile              | -     | -     | -     | -      | -     | -     | -      | -      | -      | -      |
| % of Total adspend delivered via mobile                | -     | -     | -     | -      | -     | -     | 4.0    | 6.5    | 9.7    | 10.8   |
| Adspend delivered via mobile devices (UAH m)           | -     | -     | -     | -      | -     | -     | 450    | 950    | 1,700  | 2,250  |
| <i>Mobile display</i>                                  | -     | -     | -     | -      | -     | -     | 300    | 600    | 1,100  | 1,500  |
| <i>Mobile classified</i>                               | -     | -     | -     | -      | -     | -     | -      | -      | -      | -      |
| <i>Mobile search</i>                                   | -     | -     | -     | -      | -     | -     | 150    | 350    | 600    | 750    |

Source: Zenith

## Mobile as % of total adspend



The top three providers in the Ukrainian market are Kyivstar [54.7% of the market], Vodafone [44.4%] and Lifecell [23.6%].

Mobile advertising is the most dynamic growth segment in digital in 2017: mobile advertising shows over 100% growth in spend vs. 2016 compared to +29% for total digital media. Mobile advertising principally uses display ads (banners) because there still remains a traditional bias towards display ads (banners) in inventory and spends for desktop digital, and because mobile internet speeds are not generally sufficient for video ads.

21% of mobile internet users consider the mobile phone or smartphone to be their main device.

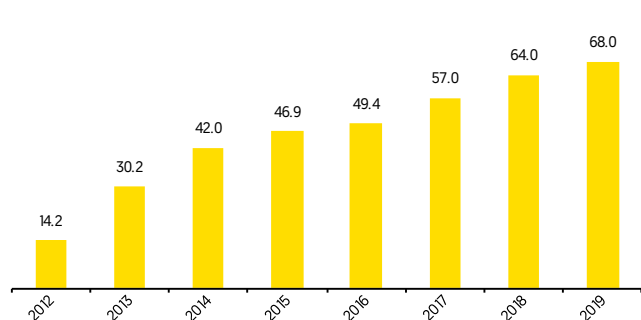
3G network usage increased to 27.7% of total internet usage in 2017, up from 16.9% in 2016 and 5.7% in 2015. Meanwhile, 4G is set to become available in 2018.

# United Kingdom

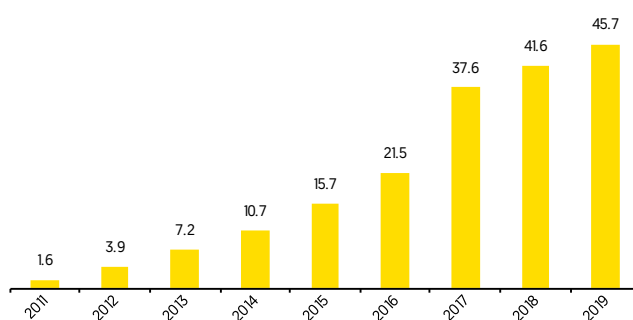
|                                                        | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   | 2019   |
|--------------------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Smartphone penetration (%)                             | 23.0   | 31.0   | 41.0   | 43.0   | 49.0   | 55.0   | 60.0   | 65.0   | 69.0   | 72.3   |
| Tablet penetration (%)                                 | 3.5    | 9.4    | 20.1   | 29.7   | 39.7   | 51.0   | 58.4   | 59.0   | 60.1   | 60.9   |
| Internet - Average daily minutes of consumption        | 82     | 88     | 93     | 110    | 127    | 185    | 199    | 224    | 231    | 240    |
| Mobile internet - Average daily minutes of consumption | -      | -      | 13.2   | 33     | 53     | 87     | 98     | 128    | 148    | 163    |
| % of average daily internet consumption via mobile     | -      | -      | 14.2   | 30.2   | 42.0   | 46.9   | 49.4   | 57.0   | 64.0   | 68.0   |
| Total advertising expenditure (£m)                     | 12,136 | 12,531 | 13,251 | 13,957 | 15,128 | 16,775 | 17,839 | 17,965 | 18,294 | 19,029 |
| % of programmatic adspend going to mobile              | -      | -      | -      | 25.3   | 40.2   | 16.6   | 30.7   | 30.7   | 30.7   | 30.7   |
| % of Total adspend delivered via mobile                | -      | 1.6    | 3.9    | 7.2    | 10.7   | 15.7   | 21.5   | 37.6   | 41.6   | 45.7   |
| Adspend delivered via mobile devices (£m)              | -      | 197    | 515    | 1,005  | 1,612  | 2,633  | 3,841  | 6,754  | 7,609  | 8,705  |
| Mobile display                                         | -      | 60     | 150    | 424    | 812    | 1,321  | 1,920  | 2,836  | 3,104  | 3,523  |
| Mobile classified                                      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| Mobile search                                          | -      | 137    | 365    | 581    | 800    | 1,312  | 1,921  | 3,918  | 4,505  | 5,181  |

Source: Zenith, AA

Mobile as % of daily internet consumption



Mobile as % of total adspend



Mobile viewing is currently dominated by short form content and is used as a channel to dip in and out of. However, we are already seeing a shift in the way people are consuming longer form content.

The uptake of SkyGo's services shows that people are increasingly looking to watch premium content on the move. This is a trend that will continue, but will be limited by technology and the data packages available in the market.

As these costs start to reduce, we will see a rise in the amount of content consumed on mobile devices.

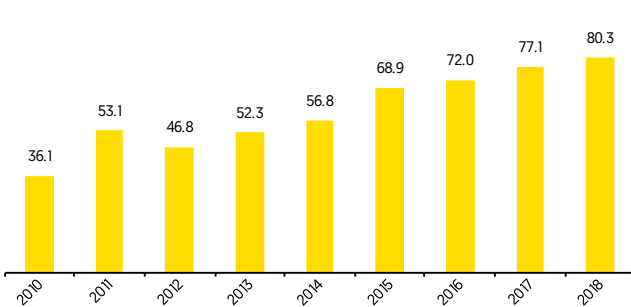
The real breakthrough will be when we start to see more robust solutions to multi device linking. Consumers will be looking to seamlessly switch between multiple devices in different locations whilst watching a single piece of content. The consumer journey and targeting capabilities this will allow will be the real breakthrough moment in mobile video.

# United States of America

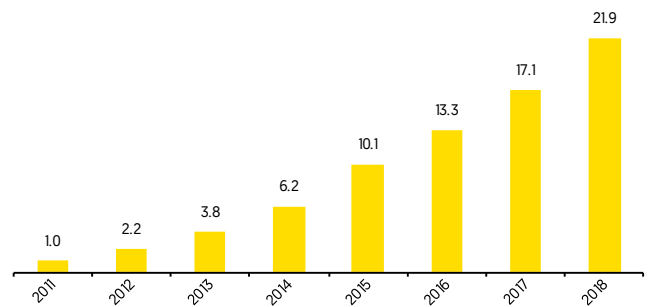
|                                                        | 2010    | 2011    | 2012    | 2013    | 2014    | 2015    | 2016    | 2017    | 2018    | 2019    |
|--------------------------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Smartphone penetration (%)                             | -       | 33.5    | 45.8    | 46.3    | 53.6    | 59.3    | 63.9    | 67.3    | 69.6    | 71.0    |
| Tablet penetration (%)                                 | -       | 13.1    | 17.6    | 41.8    | 46.7    | 49.4    | 51.4    | 52.7    | 53.7    | 54.2    |
| Internet - Average daily minutes of consumption        | 86      | 85      | 127     | 141     | 155     | 180     | 189     | 213     | 234     | 256     |
| Mobile internet - Average daily minutes of consumption | 31      | 45      | 60      | 74      | 88      | 124     | 136     | 164     | 188     | 214     |
| % of average daily internet consumption via mobile     | 36.1    | 53.1    | 46.8    | 52.3    | 56.8    | 68.9    | 72.0    | 77.1    | 80.3    | 83.6    |
| Total advertising expenditure (US\$ m)                 | 152,163 | 154,705 | 161,875 | 167,996 | 176,296 | 182,675 | 190,778 | 197,474 | 204,244 | 210,625 |
| % of programmatic adspend going to mobile              | -       | -       | 15      | 30      | 52      | 60      | 65      | 70      | 75      | 78      |
| % of Total adspend delivered via mobile                | -       | 1.0     | 2.2     | 3.8     | 6.2     | 10.1    | 13.3    | 17.1    | 21.9    | 25.4    |
| Adspend delivered via mobile devices (US\$ m)          | -       | 1,571   | 3,522   | 6,308   | 10,910  | 18,498  | 25,422  | 33,712  | 44,764  | 53,541  |
| Mobile display                                         | -       | 783     | 1,237   | 1,905   | 2,914   | 4,459   | 5,524   | 7,047   | 9,055   | 10,570  |
| Mobile video                                           | -       | 107     | 340     | 659     | 1,079   | 1,943   | 3,017   | 5,341   | 8,403   | 10,742  |
| Mobile classified                                      | -       | 33      | 65      | 129     | 473     | 638     | 811     | 1,034   | 1,311   | 1,477   |
| Mobile search                                          | -       | 492     | 1,479   | 2,708   | 4,289   | 6,246   | 8,722   | 9,594   | 10,554  | 12,325  |
| Mobile radio                                           | -       | 16      | 35      | 78      | 256     | 680     | 816     | 1,026   | 1,190   | 1,474   |
| Mobile podcast                                         | -       | 90      | 92      | 92      | 92      | 93      | 95      | 99      | 103     | 108     |
| Mobile social media                                    | -       | 50      | 273     | 738     | 1,806   | 4,439   | 6,436   | 9,571   | 14,148  | 16,845  |

Source: eMarketer, Zenith

Mobile as % of daily internet consumption



Mobile as % of total adspend



The United States is one of the largest mobile markets in the world. Currently the United States accounts for around 11% of all worldwide smartphone shipments, second only to China. In 2016, 63.9% of A18+ used a smartphone and 51.4% used a tablet. With many mobile users continuing to 'trade up' (the practice of trading in older smart phones for newer models), these numbers are only expected to grow. By 2019, 71.0% of the population is expected to be using a smartphone and 54.2% will be using tablets.

In the US, around 28% of mobile advertising spend comes from paid search and a similar amount from social media advertising as devices become increasingly ubiquitous and

are part of people's everyday lives. Display follows, at 21% of all mobile spending, then mobile video at 16%. In 2018, social media advertising is expected to overtake paid search as the biggest contributor to mobile spend, accounting for as much as 32% of the total.

The future of mobile is bright, with innovation coming from many different places. One major area of growth will be with mobile augmented reality, which is expected to experience massive growth. Many brands have already experimented with AR and with the right strategy, brands have the ability to create an amazing engagement platform by inviting customers to an interactive experience.

# Other markets

## Czech Republic

|                                                        | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   | 2019   |
|--------------------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Smartphone penetration [%]                             | -      | -      | 17.0   | 26.0   | 36.0   | 46.0   | 53.0   | 58.0   | 62.0   | 71.0   |
| Tablet penetration [%]                                 | -      | -      | 5.0    | 11.0   | 19.0   | 24.0   | 28.0   | 31.0   | 33.0   | 35.0   |
| Internet - Average daily minutes of consumption        | -      | -      | 0      | 99     | 115    | 130    | 142    | 151    | 160    | 165    |
| Mobile internet - Average daily minutes of consumption | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| % of average daily internet consumption via mobile     | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| Total advertising expenditure [CZK m]                  | 22,133 | 22,719 | 22,788 | 22,417 | 23,069 | 23,815 | 25,477 | 26,873 | 27,839 | 28,880 |
| % of programmatic adspend going to mobile              | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| % of Total adspend delivered via mobile                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| Adspend delivered via mobile devices [CZK m]           | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| <i>Mobile display</i>                                  | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| <i>Mobile classified</i>                               | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| <i>Mobile search</i>                                   | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |

Source: Zenith

|             | have mobile phone |      | have smartphone |      | main home user of tablet |      |
|-------------|-------------------|------|-----------------|------|--------------------------|------|
|             | [000s]            | [%]  | [000s]          | [%]  | [000s]                   | [%]  |
| Men         | 4211              | 49.6 | 2 626           | 51.1 | 533                      | 54.6 |
| Women       | 4281              | 50.4 | 2 509           | 48.9 | 443                      | 45.4 |
| 12-15 years | 163               | 1.9  | 128             | 2.5  | 31                       | 3.1  |
| 16-24 years | 1119              | 13.2 | 1 003           | 19.5 | 151                      | 15.4 |
| 25-34 years | 1444              | 17   | 1 233           | 24   | 174                      | 17.9 |
| 35-44 years | 1848              | 21.8 | 1 353           | 26.4 | 234                      | 24   |
| 45-54 years | 1200              | 14.1 | 724             | 14.1 | 176                      | 18   |
| 55-64 years | 1296              | 15.3 | 453             | 8.8  | 100                      | 10.3 |
| 65-79 years | 1422              | 16.7 | 240             | 4.7  | 110                      | 11.3 |

Source: Zenith

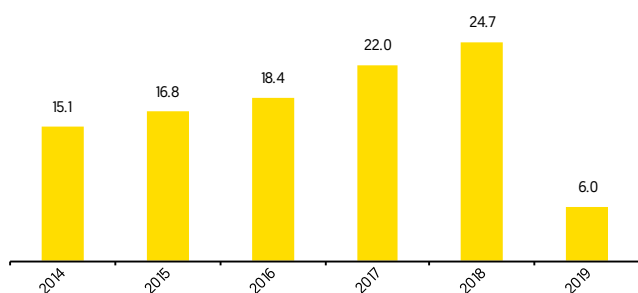
The Top three mobile providers are O2 [32.4 % penetration], T-Mobile [33.3 %], and Vodafone [23.6 %].

## Ireland

|                                            | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|--------------------------------------------|------|------|------|------|------|------|------|------|------|------|
| Smartphone penetration (%)                 | -    | 35.0 | 42.0 | 50.0 | 60.0 | 70.0 | 83.0 | 88.0 | 91.0 | 93.0 |
| Tablet penetration (%)                     | -    | 8.0  | 15.0 | 24.0 | 35.0 | 53.0 | 60.0 | 65.0 | 68.0 | 70.0 |
| Total advertising expenditure (€ m)        | 770  | 737  | 736  | 715  | 812  | 874  | 905  | 905  | 938  | 961  |
| % of Total adspend delivered via mobile    | -    | -    | -    | 0.0  | 15.1 | 16.8 | 18.4 | 22.0 | 24.7 | 27.0 |
| Adspend delivered via mobile devices (€ m) | -    | -    | -    | 0    | 122  | 147  | 166  | 199  | 231  | 259  |
| <i>Mobile display</i>                      | -    | -    | -    | -    | 44   | 51   | 60   | 83   | 96   | 108  |
| <i>Mobile classified</i>                   | -    | -    | -    | -    | 8    | 8    | 6    | 6    | 5    | 5    |
| <i>Mobile search</i>                       | -    | -    | -    | -    | 71   | 88   | 100  | 111  | 130  | 145  |

Source: comScore, Radical, Core Media outlook

### Mobile as % of total adspend

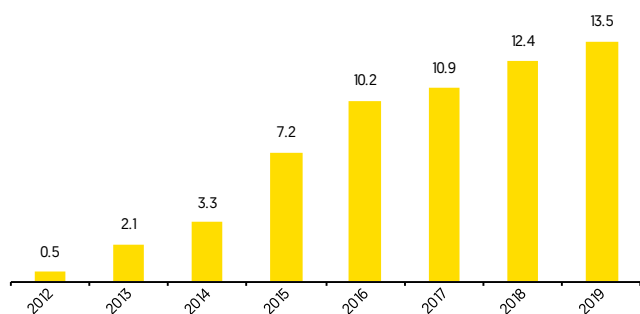


## Norway

|                                                        | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   | 2019   |
|--------------------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Smartphone penetration [%]                             | 33.0   | 54.0   | 66.0   | 72.2   | 81.0   | 83.4   | 85.9   | 88.5   | 91.2   | 92.0   |
| Tablet penetration [%]                                 | 2.0    | 11.0   | 28.6   | 44.2   | 56.8   | 58.5   | 60.3   | 62.1   | 63.9   | 65.0   |
| Internet - Average daily minutes of consumption        | -      | -      | -      | 128    | 131    | 137    | 140    | 145    | 150    | 157    |
| Mobile internet - Average daily minutes of consumption | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| % of average daily internet consumption via mobile     | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| Total advertising expenditure (NOK m)                  | 14,598 | 15,687 | 15,949 | 17,066 | 16,462 | 17,338 | 16,920 | 17,198 | 17,368 | 17,870 |
| % of programmatic adspend going to mobile              | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| % of Total adspend delivered via mobile                | -      | -      | 0.5    | 2.1    | 3.3    | 7.2    | 10.2   | 10.9   | 12.4   | 13.5   |
| Adspend delivered via mobile devices (NOK m)           | -      | -      | 84     | 356    | 543    | 1,257  | 1,723  | 1,875  | 2,156  | 2,415  |
| <i>Mobile display</i>                                  | -      | -      | 84     | 356    | 543    | 1,257  | 1,723  | 1,875  | 2,156  | 2,415  |
| <i>Mobile classified</i>                               | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| <i>Mobile search</i>                                   | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |

Source: Zenith

### Mobile as % of total adspend



## Pakistan

|                                                        | 2010   | 2011   | 2012   | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   | 2019   |
|--------------------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Smartphone penetration (%)                             | 1.7    | 2.5    | 3.5    | 5.0    | 9.0    | 11.0   | 20.4   | 29.0   | 36.0   | 40.0   |
| Tablet penetration (%)                                 | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| Internet - Average daily minutes of consumption        | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| Mobile internet - Average daily minutes of consumption | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| % of average daily internet consumption via mobile     | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| Total advertising expenditure (PKR m)                  | 37,355 | 37,884 | 38,260 | 39,234 | 44,514 | 48,845 | 51,545 | 53,383 | 55,400 | 57,079 |
| % of programmatic adspend going to mobile              | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| % of Total adspend delivered via mobile                | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| Adspend delivered via mobile devices (PKR m)           | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| <i>Mobile display</i>                                  | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| <i>Mobile classified</i>                               | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |
| <i>Mobile search</i>                                   | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      |

Source: Zenith

The main mobile provider is Jazz, which recently acquired Warid; it has over 52 million subscribers. Also active in this market are Telenor (40 million) and Zong (28 million). 77% of people using mobile devices are in the 21-30 age group. 60% of people in Pakistan use more than one mobile phone, and over 40 million are smartphone users.

The traffic on mobile devices is increasing and the audience is being exposed to multiple media platforms, which is why advertisers have started focusing a lot on mobile advertising - to help achieve multi-screen exposure.

Augmented reality apps have started to integrate with utility apps; they are quickly becoming some of the most actively engaging apps out there today.

Canvas ads are a full-screen ad experience that delivers fully immersive, interactive ads that are hosted completely on Facebook, eliminating the need for users to click out of the app to engage with mobile content. Their usage has increased considerably of late.

Digital media audiences have increased their consumption of video content in recent times, but it might be more accurate to say that mobile video content is now consuming digital media.

## Philippines

|                                                        | 2010   | 2011   | 2012   | 2013   | 2014   | 2015    | 2016    | 2017    | 2018    | 2019    |
|--------------------------------------------------------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|
| Smartphone penetration [%]                             | -      | 4.1    | 4.2    | 9.0    | 18.7   | 24.5    | 37.3    | 51.1    | 58.3    | 62.4    |
| Tablet penetration [%]                                 | -      | -      | 0.2    | 1.4    | 3.9    | 4.3     | 5.7     | 6.2     | 7.5     | 8.0     |
| Internet - Average daily minutes of consumption        | -      | 61     | 69     | 72     | 75     | 71      | 71      | 74      | 75      | 75      |
| Mobile internet - Average daily minutes of consumption | -      | -      | -      | -      | -      | -       | -       | -       | -       | -       |
| % of average daily internet consumption via mobile     | -      | -      | -      | -      | -      | -       | -       | -       | -       | -       |
| Total advertising expenditure [PHP m]                  | 62,235 | 69,650 | 77,800 | 85,550 | 93,050 | 123,353 | 158,508 | 206,956 | 243,940 | 282,624 |
| % of programmatic adspend going to mobile              | -      | -      | -      | -      | -      | -       | -       | -       | -       | -       |
| % of Total adspend delivered via mobile                | -      | -      | -      | -      | -      | -       | -       | -       | -       | -       |
| Adspend delivered via mobile devices [PHP m]           | -      | -      | -      | -      | -      | -       | -       | -       | -       | -       |
| <i>Mobile display</i>                                  | -      | -      | -      | -      | -      | -       | -       | -       | -       | -       |
| <i>Mobile classified</i>                               | -      | -      | -      | -      | -      | -       | -       | -       | -       | -       |
| <i>Mobile search</i>                                   | -      | -      | -      | -      | -      | -       | -       | -       | -       | -       |

Source: Nielsen CMV, Nielsen Media Index, ZOP Adex Forecasts

The main mobile providers are Globe and Smart/PLDT. The median age of mobile users is 24, and there are around 119 million mobile subscriptions altogether, 95% of which are pre-paid. Users spend an average of 3.2 hours on mobile each day, and the Philippines constitutes the fastest-growing mobile app market in South East Asia. The most common types of mobile ads are location based, in-app, hypertargeted, SMS blast and wifi ads.

E-commerce is gaining ground: five in ten mobile phone users have recently bought something through their phone [games, music, apps, services, and physical items]. Service-related apps are growing e.g. food delivery [food panda], grocery delivery [honestbee, greengrocer], cleaning services and house repair services.

Media streaming services such as Netflix, Spotify and HOOQ are also fast gaining popularity.

## Portugal

|                                                        | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|--------------------------------------------------------|------|------|------|------|------|------|------|------|------|------|
| Smartphone penetration [%]                             | -    | -    | -    | 31.4 | 40.9 | 52.0 | 62.4 | 68.6 | 73.2 | 76.1 |
| Tablet penetration [%]                                 | -    | -    | 3.8  | 8.8  | 15.1 | 21.1 | 25.4 | 30.4 | 36.5 | 39.2 |
| Internet - Average daily minutes of consumption        | 47   | 43   | 72   | 80   | 87   | 79   | 81   | 78   | 79   | 80   |
| Mobile internet - Average daily minutes of consumption | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| % of average daily internet consumption via mobile     | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Total advertising expenditure [€ m]                    | 811  | 706  | 586  | 538  | 589  | 610  | 639  | 658  | 690  | 726  |
| % of programmatic adspend going to mobile              | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| % of Total adspend delivered via mobile                | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Adspend delivered via mobile devices [€ m]             | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| <i>Mobile display</i>                                  | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| <i>Mobile classified</i>                               | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| <i>Mobile search</i>                                   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |

## Slovakia

|                                                        | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|--------------------------------------------------------|------|------|------|------|------|------|------|------|------|------|
| Smartphone penetration (%)                             | -    | -    | -    | 29.3 | 32.4 | 44.7 | 50.0 | 53.0 | 56.0 | 59.0 |
| Tablet penetration (%)                                 | -    | -    | 1.7  | 3.7  | 16.0 | 22.2 | 22.5 | 24.2 | 26.0 | 29.0 |
| Internet - Average daily minutes of consumption        | 34   | 43   | 61   | 76   | 79   | 75   | 75   | 78   | 80   | 82   |
| Mobile internet - Average daily minutes of consumption | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| % of average daily internet consumption via mobile     | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Total advertising expenditure (€m)                     | 510  | 504  | 508  | 504  | 512  | 590  | 634  | 667  | 701  | 725  |
| % of programmatic adspend going to mobile              | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| % of Total adspend delivered via mobile                | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Adspend delivered via mobile devices (€m)              | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| <i>Mobile display</i>                                  | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| <i>Mobile classified</i>                               | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| <i>Mobile search</i>                                   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |

Source: Zenith

There are three main competitors in Slovakia – Orange, Telekom and O2 – covering around 90% of the market. There are also several minor providers focusing on prepaid services e.g. 4ka, Tesco Mobile, Funfon and Juro. In 2017, around 80% of people have access to the internet.

The most common type of mobile advertising goes to social networks or RTB platforms. Local media houses do not monitor investment in mobile advertising and continue to focus on desktop/laptop advertising. The highest mobile penetration rate is for those aged 20-25 years and for people with a university education.

Time spent on mobile devices replaces consumption of other media channels. It is print that is suffering the most; there is a general assumption that TV is suffering as well, but we have not seen any drop in TV consumption over the past few years. Mobile consumption tends to directly replace desktop, especially on social networks and for services such as travel info.

Future trends to look out for include the rise of VR, augmented reality and artificial intelligence chat bots.

## South Africa

|                                                        | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|--------------------------------------------------------|------|------|------|------|------|------|------|------|------|------|
| Smartphone penetration [%]                             | 11.2 | 15.8 | 21.9 | 37.2 | 47.8 | 51.1 | 61.9 | 70.8 | 79.7 | 83.0 |
| Tablet penetration [%]                                 | -    | -    | 1.8  | 3.7  | 5.5  | 8.9  | 10.8 | 13.1 | 15.4 | 17.2 |
| Internet - Average daily minutes of consumption        | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Mobile internet - Average daily minutes of consumption | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| % of average daily internet consumption via mobile     | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Total advertising expenditure [ m]                     | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| % of programmatic adspend going to mobile              | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| % of Total adspend delivered via mobile                | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| Adspend delivered via mobile devices [ m]              | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| <i>Mobile display</i>                                  | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| <i>Mobile classified</i>                               | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |
| <i>Mobile search</i>                                   | -    | -    | -    | -    | -    | -    | -    | -    | -    | -    |

Source: AMPS

## South Korea

|                                                        | 2010       | 2011       | 2012       | 2013       | 2014       | 2015       | 2016       | 2017       | 2018       | 2019       |
|--------------------------------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Smartphone penetration [%]                             | 14.5       | 42.5       | 60.0       | 79.7       | 82.3       | 83.0       | 83.5       | 83.9       | 84.2       | 84.5       |
| Tablet penetration [%]                                 | 1.0        | 3.1        | 7.5        | 13.9       | 18.2       | 20.2       | 22.0       | 23.6       | 25.0       | 25.4       |
| Internet - Average daily minutes of consumption        | -          | -          | -          | -          | -          | -          | -          | -          | -          | -          |
| Mobile internet - Average daily minutes of consumption | -          | -          | -          | -          | -          | -          | -          | -          | -          | -          |
| % of average daily internet consumption via mobile     | -          | -          | -          | -          | -          | -          | -          | -          | -          | -          |
| Total advertising expenditure [KRW m]                  | 10,418,498 | 11,340,461 | 12,102,285 | 12,169,723 | 12,467,263 | 12,854,773 | 13,077,066 | 13,402,792 | 13,728,518 | 14,054,244 |
| % of programmatic adspend going to mobile              | -          | -          | -          | -          | -          | -          | -          | -          | -          | -          |
| % of Total adspend delivered via mobile                | -          | -          | -          | -          | -          | -          | -          | -          | -          | -          |
| Adspend delivered via mobile devices [KRW m]           | -          | -          | -          | -          | -          | -          | -          | -          | -          | -          |
| <i>Mobile display</i>                                  | -          | -          | -          | -          | -          | -          | -          | -          | -          | -          |
| <i>Mobile classified</i>                               | -          | -          | -          | -          | -          | -          | -          | -          | -          | -          |
| <i>Mobile search</i>                                   | -          | -          | -          | -          | -          | -          | -          | -          | -          | -          |

Source: Zenith

## *Mobile Advertising Forecasts 2017*

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