MOBILE INTERNET ECONOMY

IN RUSSIA 2017

Mobile Internet Economy in Russia

The OC&C Consulting and Russian Association for Electronic Communications report

Executive Summary

The first mass produced cell phone was introduced almost half a century ago with the sole purpose of placing calls, anyplace anytime. Since then, our lives have changed with one technological advancement after another, we have now fully incorporated “devices” into our lives as an indispensable part of our daily routine. Now, we use these mobile devices for surfing the web, shopping, playing games, looking for rides, banking, socializing and messaging, much more often than actually just placing calls. In the process, the family of mobile devices have radically expanded to cover new gadgets such as tablets, wearables and other smart devices. With every new advancement, these mobile devices have transformed into a virtual toolbox with a solution for almost every need, and revolutionized the way people live, work, play, connect, and interact. Today where there’s a need, there’s an app - from transportation to news, payments to social media, and gifts to comedy.

Consumers are not the only ones that have been influenced by mobile devices. Mobile technology has completely transformed how businesses function and has become a core driver of many existing industries, while at the same time creating many new ones. Mobile technologies have become an essential part of how economies work and function, while offering unprecedented opportunities for growth both in developed and developing markets.

Contributions of the mobile economy (mobile internet economy, to be precise) to businesses and consumers are vast and this report provides a holistic view on the mobile technology integrated economy for an all-inclusive review and assessment. A methodology which is based on a balanced data driven approach bringing together all critical elements of the entire mobile internet ecosystem (not just businesses or high-level determinants) to assess its benefits and potential for any given market.

This report aims to structure, size and analyze the effects of the mobile ecosystem on the overall Russian economy. Economic factors suggest that the already considerable mobile economy has room for further growth. Russia is expected to be the 11th largest economy in the world with USD 1,561 bn GDP as of 2017, but has been going through an oil price driven economic downturn since 2010. As has been the case in many other markets, this has put almost every major industry under duress; but affecting mobile economy (commerce, app stores, mobile banking, mobile payments all players other than MNOs) much less than others.

Russia has a young and dynamic population with 45% of total population being under the age of 35. Mobile subscriber penetration is at 160%, which creates many opportunities for a market with 146m population. Russian smartphone owners are one of the most engaged consumers in the world, very active in terms of app downloads and social media.

Moreover, Russian market also meets three key criteria for continued expansion of mobile internet take up:

- Mobile subscription/usage costs are favourable, including data
- Smartphones at more affordable prices are becoming more available and preferred by customers, therefore increasing smartphone penetration
- Although mobile cellular coverage requires further development, mobile broadband speed is high

As the number of smartphone or tablet users increases and cellular coverage spreads to a larger area within the country, the scale of mobile’s impact on GDP will naturally increase. In 2016, the mobile economy had generated 1.72% of total GDP, directly. This includes activities with mobile at their heart, such as device and hardware manufacturers and retail, spend on mobile phone usage, infrastructure investment, mobile apps and their development, m-Commerce and mobile advertising. Future growth is largely expected to come from a rebalancing away from spend on traditional mobile usage and infrastructure, towards more advanced areas. We will see an increasing contribution from content family of elements in this layer, especially mobile commerce, content & advertising and app developers. This reflects the shift of mobile’s importance from being a purely communication method towards becoming something much more pervasive.

Each organization that is an active participant of the mobile economy provides business to countless suppliers and service companies. Whether these include component producers for device manufacturers, cleaning companies or outsourced HR functions for app developers; the positive impact of the mobile economy spreads far beyond those firms which may initially be identified to be more closely involved with mobile. These indirect effects contributed 1.53% to GDP with its RUB 1,303 bn value in 2016.

In addition but outside of the immediate mobile device value chain, there are also a wide range of businesses who use mobile phones to improve their efficiency and interact with consumers in new ways. We define this as the 'Business Surplus' where SMEs are some of the largest beneficiaries. With organized SME services platforms allowing them to access larger number of targeted consumers, and social media boutiques with dedicated followers, they are enabled to gain access to an audience which they would never be able to afford to reach through traditional marketing efforts. Such use-cases show RUB c.451 bn additional revenues for SMEs in Russia including payments startups, taxi drivers, restaurants, boutiques, etc. This value is equal to 0.54% of GDP in 2016, pushing the overall contribution to GDP from the mobile economy as a whole to 3.80% in 2016.

In summary, indirect contribution adds up to 2.08% of total GDP, while direct effects remain at only 1.72%. Direct and indirect mobile economy, in total, contributes to 3.80% of total GDP. Based on these economic values created, mobile economy generated approximately 1.2 million jobs in 2016, which equals to 1.6% of total employment in Russia. There is a notable contribution by the sectors of the mobile internet to the Russian economy: context advertising (RUB 102B), online travel (RUB 368B), online retail (RUB 706B).

Consumers are the group which gains the most from the mobile economy, even though the impact on business is far ranging. Consumers currently derive on average RUB 46.4 k of benefits a year to owning a mobile phone. Internet connectivity contributes the marginally larger portion of this, and followed very closely by voice/SMS as well as device itself. This is well above the RUB 9.1 k they currently spend on devices and their operation each year, giving an effective 'profit' or 'consumer surpluses of RUB 37.3 k per device owning consumer.

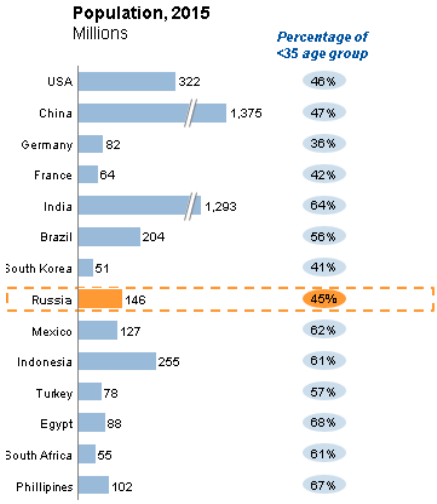
Our recent consumer survey has shown that a significant portion of device owners would give up luxuries such as dining out (63%) to retain access to their connected mobile devices. 58% of females would give up watching their favorite show, while 61% of the males would give up watching their favorite football club matches for 3 months, showing strong preference for connected devices over routine social activities. 7% have indicated they would even give up seeing their friends or family in person – clearly video streaming has come on a long way.

With its rapidly expanding app developer scene and shift to m-Commerce, the mobile economy is already on track for its influence to rise in Russia and have further impact across the globe. Strengthening the education system and promotion IT related sectors to keep IT skills talent pool sufficient (and, local), should be the main area of focus for the next decade. With collaboration from all related parties, Russia has no obstacles to becoming the Eastern Silicon Valley of the world.

Environment for Mobile Internet Adoption in Russia

Russia is the 13th largest economy in the world, generating approx. USD 1,281 bn in GDP value in 2016. Since 2010, the country has been under the influence of an oil price driven economic downturn as has been the case many other markets. However, stabilization has started to be observed in currency and GDP growth, and this trend is expected to continue in the next 5 years, signalling growth in all sectors. Russia has many favorable conditions for a high impact mobile economy, to speed up its growth and to further catch up with its global counterparts.These conditions could be summarized as;

1. **Young, connected and engaged population:** Population is favorable for mobile economy, and Russian users are some of the world's most engaged smartphone owners
2. **Affordable connectivity:** Russia has favorable prices for mobile communications, from both basket and stand alone cost of voice & SMS perspectives. Data costs are also low in both nominal and affordability terms; creating a favorable environment to fuel mobile economy growth. In addition, fixed broadband prices are also one of the most affordable within the benchmark countries
3. **Availability of affordable equipment:** Low and continuously decreasing smartphone prices indicate further potential for mobile growth
4. **Ongoing shift towards mobile:** Mobile traffic is extending rapidly and replacing desktop
5. **Tech entrepreneur environment:** Russia has a strong tech entrepreneur environment which supports mobile initiatives to evolve and grow

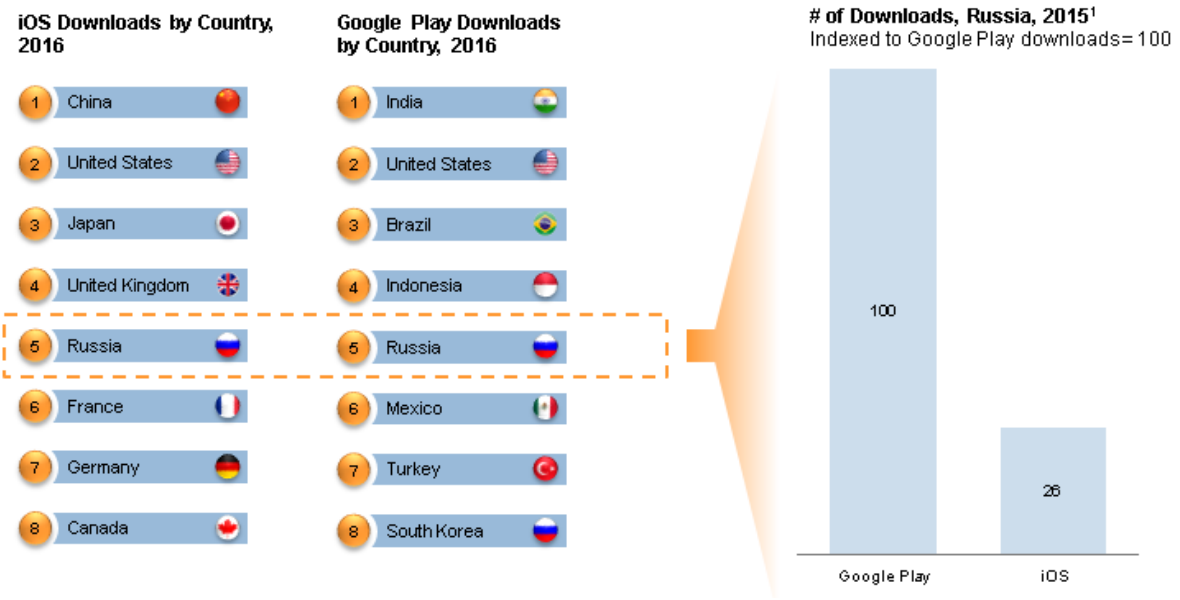


1. Young, connected and engaged population: The Russian population offers a large and dynamic market for a healthy mobile economy. The country has the 10th largest population in the world, with 45% of its 146 million population below the age of 35. The young are often quicker to engage fully with technologies, therefore this should provide an additional tailwind as the Russian mobile economy develops. In addition, this young and large population is extremely well connected. There are approx. 252 million cellular phone subscribers, meaning that the mobile penetration rate is 176% as of 2016. This rate is considerably higher than other major connected economies such as China, India and USA, and presents significant opportunities for various sub-components of different mobile internet economy layers to further flourish within an already active market. Moreover, Russian smartphone owners are well-engaged with technology and devices. Russia is the one of the top countries in terms of application downloads per capita, with an average download rate of 40 application downloads per annum (as of 2015 data).The country is the 5th biggest market in terms of application download volume for both Google Play and App Store.

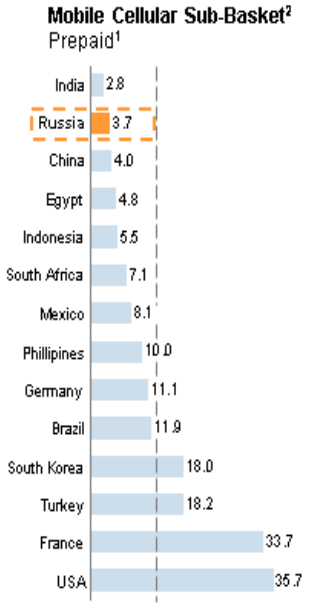
Based on our survey results, Russian smartphone holders go beyond pre-installed apps and download variety of applications/services to their mobile devices themselves. In fact, an average Russian consumer spends RUB 73.3 monthly for paid applications/services considering all their mobile devices. 49% of the survey respondents indicated that they would prefer using the app version of their favorite website, compared to the 31% that would keep using the web browser given the choice. Similarly, a significant majority of the respondents find shopping (50%), watching videos (49%), reading news (46%) and using financial services (63%) more convenient through mobile applications rather than desktop pages. Social media is the most popular app category with 85% download rate, followed by navigation (79%) and browser (79%) apps. Games rank as the 4th most popular app download category with 74% download rate among the survey respondents. On another note, the popularity of certain applications/services does not seem to be affected by their format. According to Medioscope 2017 research, 9 out of 15 most popular desktop pages and mobile applications were common, showing high correlation between both channels. When a service becomes popular, it is heavily used from both channels.

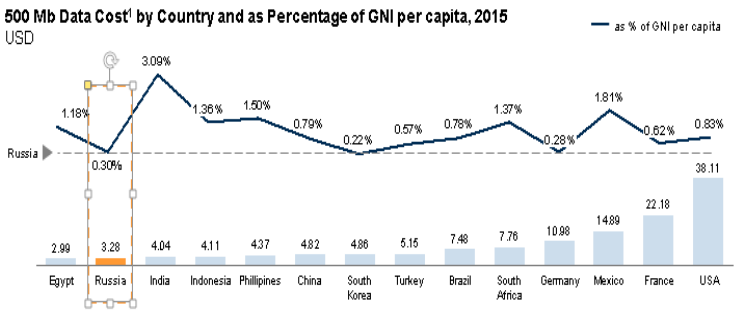
In Russia, penetration of high-end Android phones is very low compared to developed countries – even when compared to iOS. Russian users prefer Android over iOS due to less expensive smartphones offered

by Android, resulting in Android use being almost double iOS use on smartphones. Android is therefore more associated with lower income segment, low conversion rates and small transactions. However, app developers indicate that Android users are more active than iOS users. For m-Commerce ad m-Payments iOS users would make larger transactions but at a lower frequency which would be the exact opposite for Android users, who would do many transactions – in smaller amounts and intervals. Google Play downloads are 4 times more than iOS downloads, signaling consumers' favoritism towards Android.



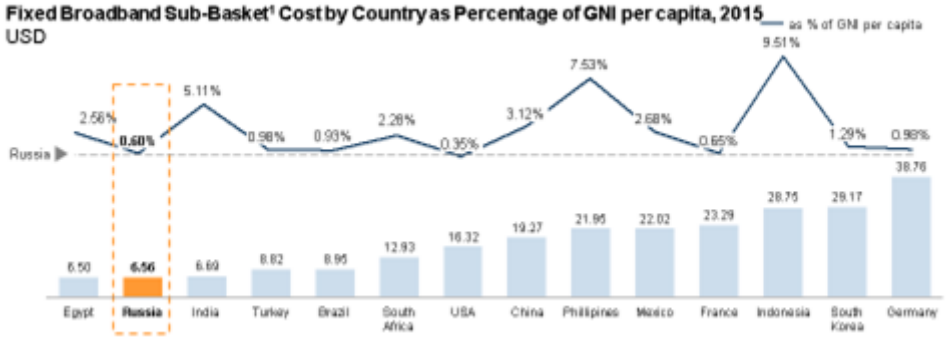
2. Affordable connectivity: Russia, unlike many other developed markets, provides very low connection and device costs fueling the growth of the mobile economy. Mobile communication prices, especially data prices, are very attractive in nominal and even PPP basis. Russia has one of the lowest prices for Internet – both broadband and mobile – which is a positive motivator for usage. This is mainly due to the fact that Russian Government has consciously invested in infrastructure and availability of free Internet for everyone. High level of competition is also another driver for this trend. Although these actions may have some immediate impact on MNO and ISP businesses (which are already very competitive and price-driven) in the sense that customers are less willing to pay; mobile economy as a whole will continue to benefit from low-cost/ free Internet as more services and content will become mobile. Currently other regions are not benefiting from this level of promoted communication as much as Moscow but the trend shows that coverage and speed of low cost/ free Internet will improve outside Moscow in the future.





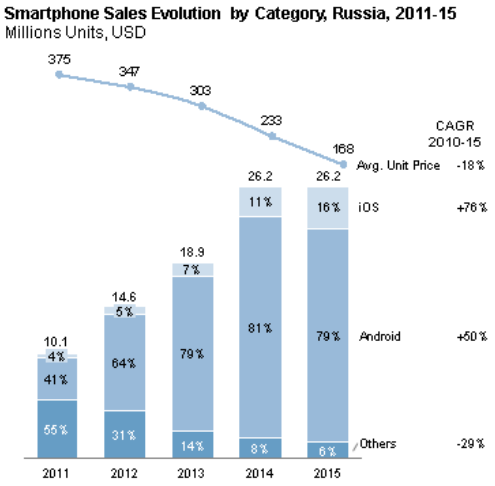
According to multicountry benchmarks, 500 MB of mobile data in Russia costs 9% of equivalent in USA,

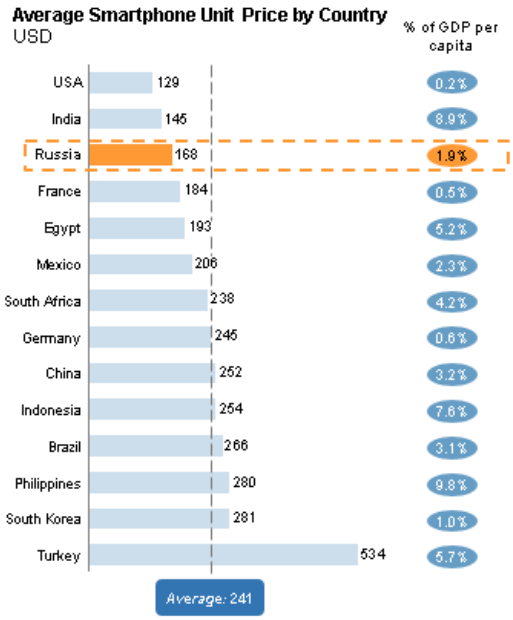
30% of Germany, 15% of France, 42% of South Africa and 75% of Philippines. (0.3% of GNI per capita for Russia - 0.83% of GNI per capita for USA).



Russia also has one of the most affordable fixed broadband costs. According to ITU fixed broadband sub-basket with min 1 GB data in Russia, costs 40% of equivalent in USA, 17% of Germany, 28% of France, 51% of South Africa and 30% of Philippines. (0.6% of GNI per capita for Russia - 0.35% of GNI per capita for USA)

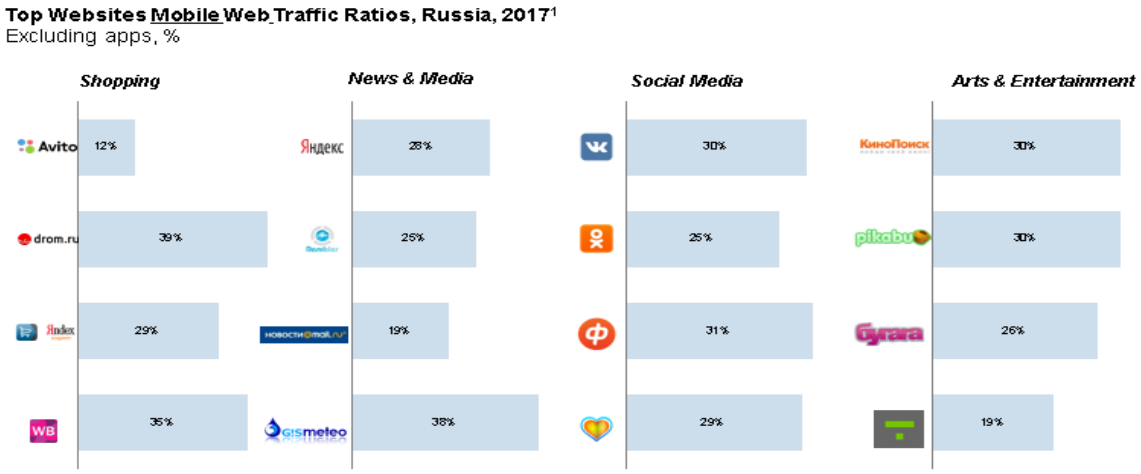
3. Availability of affordable equipment: Russian consumers lean towards more affordable smartphones than most of the benchmark countries. Smartphone penetration has just reached 50% as of 2016 and signals further improvement for growth. Although this rate is lower than most developed markets, many companies believe that almost everyone who can afford a smartphone does so, eventually, whether a phone or a tablet. This is most likely due to the discrepancy between Moscow/Saint Petersburg area and other regions as penetration in Moscow/Saint Petersburg is substantially different than the rest of the country. Therefore, almost all developers want smartphone penetration to go up only if it is going to increase with high quality mobile devices; which would allow users to use their apps efficiently. Otherwise they are not interested in smartphone penetration improvement as very low end devices won't let consumers benefit from smartphone capabilities.In line with this reasonable limitation, Android has made both tablets and smartphones accessible to everyone with open source coding. Companies from various sizes are now able to dedicate funds to manufacture smartphones and tablets that have high capabilities since they do not need to develop their own operating system or invest millions in it. In Russia,. Android is more associated with lower income segment, low conversion rates and small transactions. However, app developers indicate that Android users are more active than iOS users.





4. Ongoing shift towards mobile: There is a shift towards mobile devices in terms of internet usage. Mobile internet penetration has increased 12% per annum in the past 5 years. Similarly, traffic from mobile channel has reached 1/3rd of the total traffic for many major websites, signalling a migration of web traffic towards mobile devices. Mobile traffic accounted for 10% of total IP traffic in 2015. In 2020, the figure is expected to increase to 27%. Last year, 64% of smartphone users in Russia made payments from a mobile device in a period of 30 days. 66% have installed at least one application for payments and purchases.

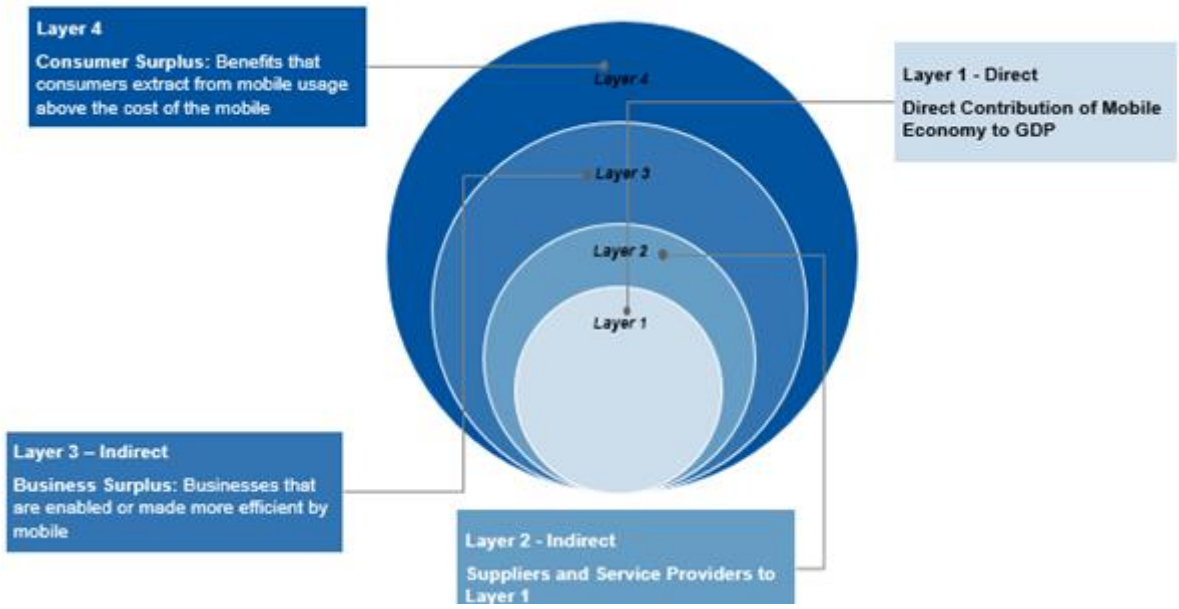
79% used such applications in the past week.



5. Tech entrepreneur environment: A strong tech entrepreneur environment is in place in Russia supported by relevant activities within the education system and the resulting digital literacy. While Russia is going through its mobile transformation, entrepreneurs are well supported by government and related associations as they are crucial to the economy and employment. Entrepreneurship in Russia follows a more tech trend compared to other similar countries like Germany, France, Italy, and Turkey; where in these other markets entrepreneurship is inspired mostly in retail & leisure sectors. Strength and variety of Layer 3 companies (businesses which thrive thanks to the availability of mobile internet) as well as the increasing presence of technology companies in the country are evidences of this trend.

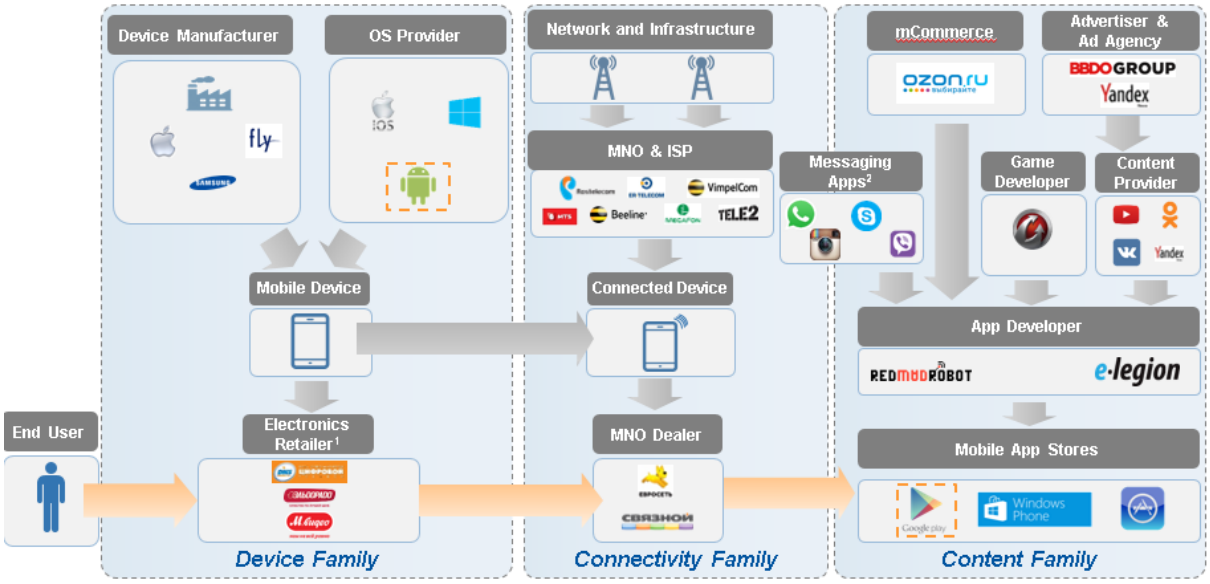
The Mobile Ecosystem

Mobile Internet Economy - although significant - is almost never reviewed as a standalone economic activity line in markets. To properly size the mobile Internet Economy, one must correctly define the entire Mobile Internet Ecosystem; and, our definition consisting of three layers is a comprehensive one that goes beyond just the “top of mind” mobile companies

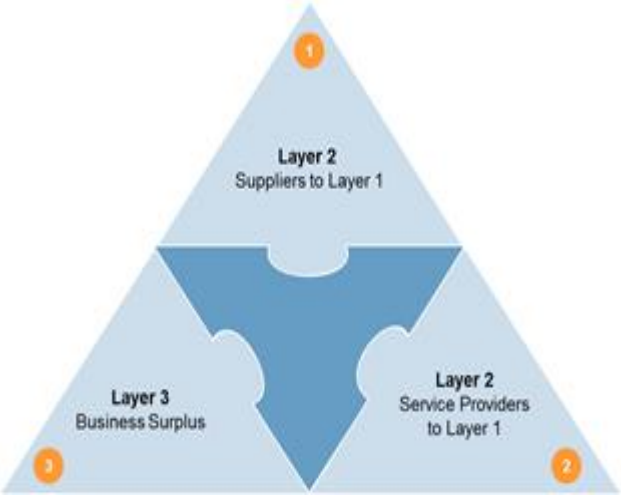


Layer 1, direct GDP contribution - consists of companies which typically come to mind when we think of the mobile economy. These are the companies that provide devices, connectivity and content to consumers and businesses.

- **The device family** of elements produces mobile devices and creates operating systems to ensure that they function, and finally delivers the completed device to customers. Device Manufacturers, OS Providers and Electronic Retailers are the main elements that belong to this family.
- **The connectivity family** of elements is based on the connectedness of the device to the real world through voice, SMS or any other data access. Network & Infrastructure companies prepare the physical necessities for MNOs & ISPs to generate connectivity through their infrastructure and internal connectivity systems. Then, MNO Dealers are responsible to deliver these services through their stores with MNO SIMcards or other connectivity devices. MNOs and ISPs then facilitate and manage the connection of the mobile device through their networks. A portion of ISP activity is included here because mobile devices can be connected to their service via Wi-Fi. Network & Infrastructure, MNOs & ISPs and MNO.
- **The content family** of elements relies heavily on Apps developed by Mobile App Developers and enriched by content providers and mRetail companies. Content providers monetize their products through advertising, in-app purchases, subscriptions, or one-off free downloads. Meanwhile, mRetail organizations may sell their services and products with the help of mobile. mRetail, Content & Advertising, Game Developers, Content Providers, App Developers and App Stores belong to this family.



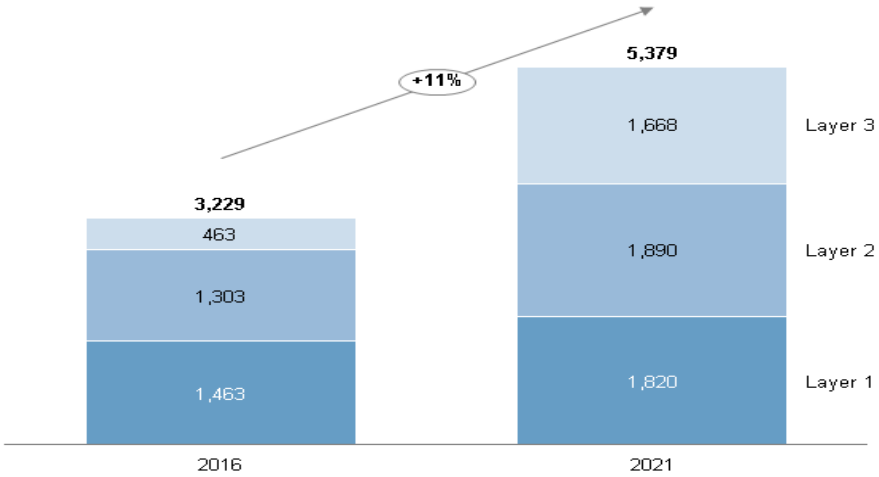
Layer 2 forms part of the indirect contribution to the economy, consisting of the suppliers and service providers which serve Layer 1 companies. Suppliers provide the raw materials which are purchased and sold) accounted as the COGS (cost of goods serve of Layer 1 companies. Some of the sectors within this element solely exist to Layer 1 companies, thus suppliers have a symbiotic relationship with them; they are highly dependent on their presence and growth. SIM card providers, spare part manufacturers, etc. are just a few examples of such supplier companies.



Layer 3 forms the final part of the mobile internet economy's indirect contribution to the overall economy (GDP). This includes the **operational improvement gains and additional revenues generated by SMEs and Enterprises thanks to the existence of mobile devices.** Although less obvious than Layer 1 and Layer 2, this layer provides a higher contribution to GDP as it factors in all of the additional benefits to business or government generated from all levels of the economy due to mobile use.

Consumer surplus 4: Layer 4 deals with the "consumer surplus". This is defined as the benefits received by consumers from the use of mobile devices and their connectivity, minus the total costs of owning a connected mobile phone. It can be thought of as the profit, in 'welfare' terms that a mobile device user makes from owning one. This layer is reflected in improvements in quality of life. The benefits that a consumer receives are divided into 3 areas: mobile internet, non-internet connectivity (Voice & SMS) and the device itself.

As explained above, Layers 1, 2, and 3 give us the total monetary value generated by the presence and use of mobile. In 2016, this monetary value was worth RUB 3,229 bn, generating approx. 3.80% of the total GDP. The overall mobile contribution is expected to reach RUB 5,379 bn by 2021 with c.10.7% pa growth.



Layer 1 and Layer 2 have generated almost 89.4% of this contribution in 2016, with Layer 1 contributing slightly more than Layer 2, suggesting that the main pillars of mobile not only creates additional revenues to sectors it collaborates, it is an immense source of revenue for the mobile economy.

Layer 1 is expected to show relatively moderate growth reach RUB 1,829 bn by 2021. Layer 2, is expected to surpass Layer 1 with its 7.7% p.a growth, reaching RUB 1,890 bn by 2021.

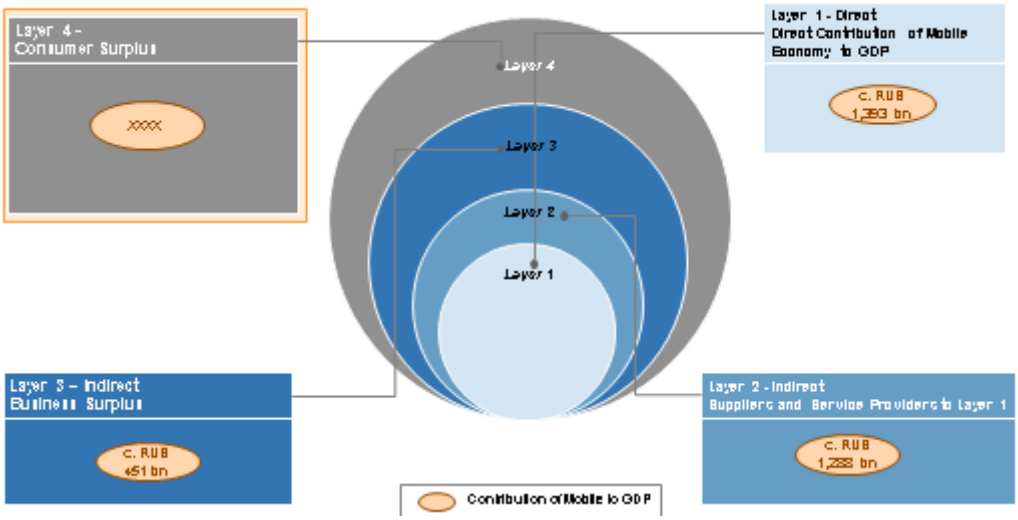
Although Layer 3's current contribution is not even close to Layer 1 and 2 (in 2016); in the upcoming years indirect effects of the mobile economy will further ripen and generate 1/3rd of the total contribution by 2021.

Encompassing all of the above, the total mobile economy is expected to show c. 10.7% p.a growth and reach to c. RUB 5,379 bn, generating 4.7% of total GDP by 2020.

While discussing the size of different layers, and the total economy created through mobile, it is important to point out the positive impact of the open source systems within all the layers. In Russia Android has one of the highest penetration rates across the world. This is mostly due to a wide range of offerings that become available with Android's open source systems. Android made it possible to reach smartphones by Russian consumers who had limited funds but need to get two phones / dual sim phones two avoid high IC/T costs. This means that presence of Android has added significant number of users to the mobile internet ecosystem. Higher smartphone penetration created a lively environment for independent app developers, a strong mobile arm for local technology giants such as Mail.ru and Yandex, and Russian-led manufacturers like Explay/ Fly and Yota.

On the other hand, Layer 4 is identified as the monetary value of mobile from a customer's perspective. Layer 4, the consumer surplus, is valued to be RUB 5,208 bn in 2016. Consumers have valued mobile technologies they use at RUB 6,471 bn, a value that far exceeds cost of ownership, which is RUB 1,262 bn.

Based on these calculations, presence of mobile in Russia contributed RUB c.3,229 bn to the economy, and RUB 5,208 bn to consumers in 2016.



Impact on GDP

This ecosystem with its 3 layers generates the Mobile Internet Economy, which is a significant contributor to the Russian economy. It will continue gaining prominence amongst other economic activities whilst increasing its influence in the Russian GDP. In 2016, mobile economy was the 11th largest economic activity in Russia with more favorable growth projections compared to some other economic activity lines. For instance, a higher contribution was derived compared to pillar sectors such as agriculture and health sectors.

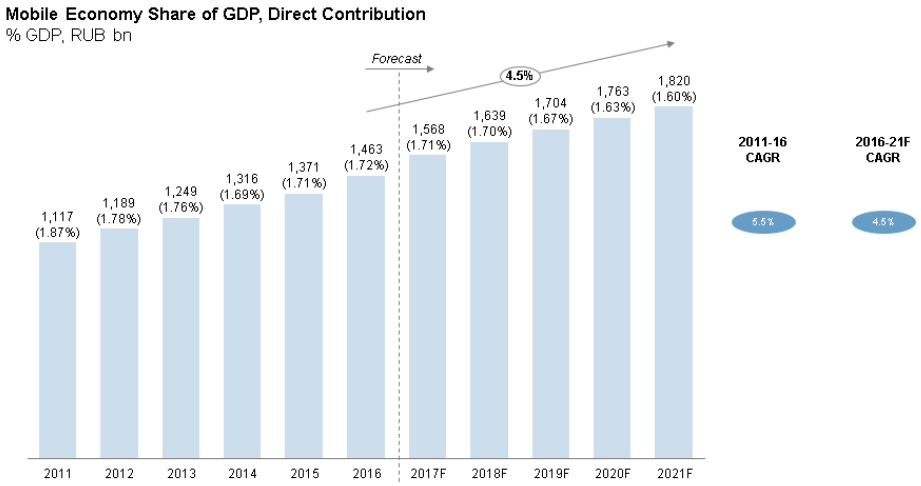
As an absolute value, Russian Mobile Internet Economy is larger than most nations' GDP. For instance, as of 2016, total value generated was equal to Belorussia's GDP, or 15% of Israel GDP. 107 out of 190 countries across the world have lower total GDP figures than the Russian mobile internet economy alone.

The share of mobile economy in GDP is expected to rise from 3.7% in 2016 to 4.7% in 2021, including all the aforementioned layers. Perhaps surprising to some, most of the growth will come from indirect contribution (Layer 3); i.e. businesses that were established/ improved/ grew due to existence of mobile

More than 7.5% of GDP growth will be driven by Mobile Internet Economy alone from 2016 to 2021. GDP growth for Russia for 2016-21 is expected to be realized at 6.0% (IMF) while Mobile Internet Economy will grow at 10.7%, reaching c. RUB 5,379 bn.

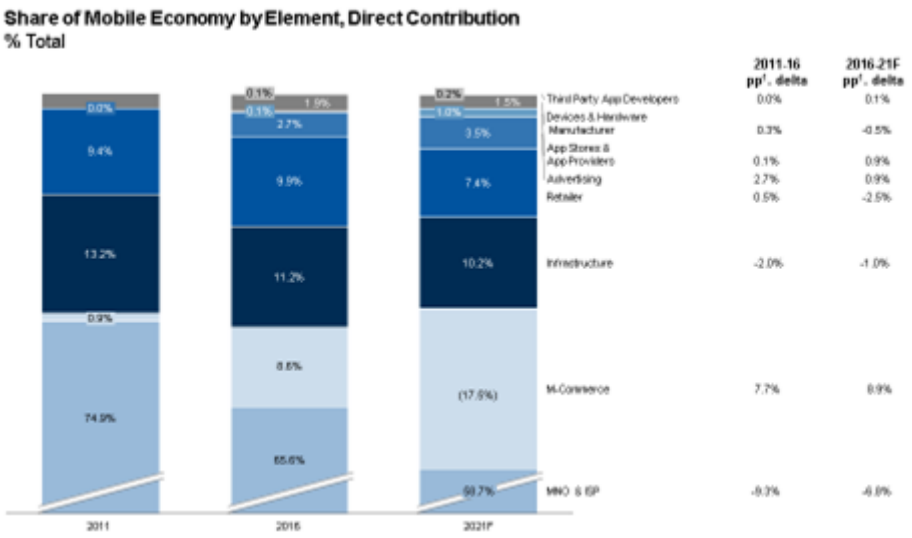
Direct Contribution

The direct contribution to GDP is the value generated through companies operating in sectors that are accepted as the main pillars of the mobile economy, meaning that the presence of such economy would not possible without theses core actors. Device and hardware manufacturers, MNOs and ISPs, retailers, third party app developers, app stores, advertisers, and m-Commerce companies establish a solid foundation for mobile economy to be present and flourish in Russia. Each of these businesses is considered an 'element' of the mobile ecosystem, with sub-families of elements focused around the device itself, connecting the device to the outer world and the activities that can be performed with it. In the past 5 years, the value generated through this Layer has been growing steadily as mobile penetration increases, app providers start competing internationally and retail slowly shifts to the online channel.



Activities of these core participants (key pillars) of the mobile economy have been growing at 5.5% a year, reaching to RUB 1,463 bn in 2016 from RUB 1,117 bn in 2011. Key drivers of this growth could mainly be attributed to the growth of more sophisticated elements within this group such as m-Commerce, online advertising and app services. This shows that mobile economy has reached a certain point where the fundamental elements such as infrastructure and MNOs & ISPs are developed enough that they are saturated in terms of growth, signaling opportunities of growth within more complex and currently nascent elements.

In the next 5 years, rate of growth of this Layer is expected to continue at 4.5% p.a. A slight decline is due to the fact that expansion in smartphone user base will be less compared to previous periods, stagnating the growth of directly related sectors such as infrastructure investments and device retailers. Similarly, consumers switching to online communication tools where they use their data is expected to bring new challenges for MNOs & ISPs. Despite such transformations, this layer will still remain as a major pillar of the mobile economy, expected to generate RUB 1,820 bn in 2021. This value will constitute 1.6% of total GDP, as data usage increases and consumers rely ever more heavily on their phone to transact and connect.



MNOs and ISPs are the major drivers of the mobile economy in Russia, generating over 65% of the total contribution in 2016. This rate is however almost 10% lower than what it was in 2011. As data becomes more affordable, allowing consumers to use data driven communication tools; revenues of these companies are getting smaller, generating less contribution. In 2021, this contribution is expected go down to approx. 58%. Nevertheless, consumers may allocate their budgets to producers of phones and app providers who will be able to capture the majority of communication revenue.

In 2016, smartphone penetration reached 52%, becoming the most prominent phone type in Russia. VoiP and internet messenger services are eroding the MNO's traditional sources of voice revenue, although sales of data plans are making up some of the shortfall. Meanwhile, phones and mobile devices are playing an ever increasing role in the activities of businesses and consumers. They are not just using them to communicate, but to transact, advertise, receive their news and entertainment.

m-Commerce has been the star performer of direct contribution within 2011-16 period, with 66.2% p.a growth. Establishment of local champions such as Yandex and Mail.ru, as well as expansion of Aliexpress are the main contributors for m-Commerce to flourish and establish itself as a dominant element of the economy. This growth trend is expected to continue until 2021, transforming m-Commerce to the largest value driver of the mobile economy after MNOs & ISPs with RUB 319 mn in terms of value. This translates into 17.5% of the total direct contribution and 0.28% of the total GDP.

Russia's app store and app developing scene, which has gained velocity after 2011, is expected to keep growing steadily - reinforcing Russia's stand as an IT skills hub. During 2011-16 period, this element has grown with 64.1% p.a, which made it the second fastest growing element. There will be a slight increase in growth, reaching 74.7% per annum, generating 0.02% of total direct contribution. Third party app developers will also launch themselves as an infant sector in this period, showing 28.5% p.a and generating RUB 3,130 mn by 2021.

Indirect Contribution

The impact of the mobile economy is not only evident within enterprises which provide an operational smartphone in the hands of consumers. It has an "ecosystem affect" for every company that supplies goods or services to those key elements of the value chain within the more obvious direct contribution layer. For instance, MNOs purchase inputs from SIM card providers, and advertisers require services from the IT sector. These sectors therefore generate a certain amount of revenue, due to the presence of Layer 1 companies. This means that revenues generated within the ecosystem are directed into other goods and service providers, stimulating economic activity in those sectors. Moreover, there are virtuous ripple effects on the broader economy in the form of increased business productivity and activity. As mobile becomes more widespread, these currently less evident benefits will be harder to ignore as their impact becomes larger on the way businesses operate. Therefore, we have factored these benefits as 'indirect contribution' into our mobile economy ecosystem.

As explained previously, the indirect contribution consists of two different layers: Layer 2 and Layer 3. Within Layer 2, we look at both suppliers and service providers as separate groups.

There are sectors/businesses which are solely created to supply the needs of the companies operating in Layer 1, such as spare part producers to serve device and hardware manufacturers, or SIM card producers to serve the MNO's. They tend to have an offering that is more tailored to the needs of Layer 1 companies (e.g. private mobile tower operators, screen label manufacturers etc.) – they can be heavily reliant on the performance of elements of Layer 1. We classify this element of Layer 2 as '*Suppliers* of Layer 1'.

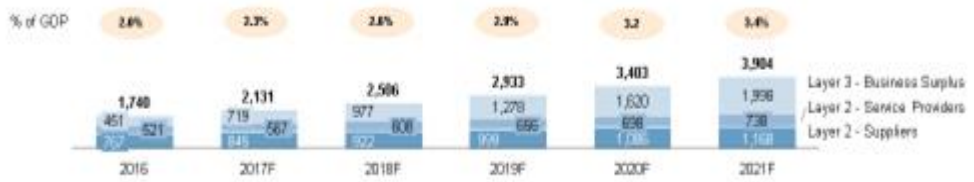
In addition, there are service provider companies that benefit from Layer 1 to a certain extent, but which are not as dependent on them as suppliers are. Examples include cleaning companies and real estate agencies. Their proposition is typically less tailored to a specific customer sector. This is defined as the '*Services Providers* of Layer 1' element of Layer 2.

Lastly, the availability of mobile affects companies irrespective of their sector by providing substantial sales and operational benefits thanks to mobile handset and tablet use. These additional benefits are accounted for in Layer 3, the business surplus created through the use of mobile.

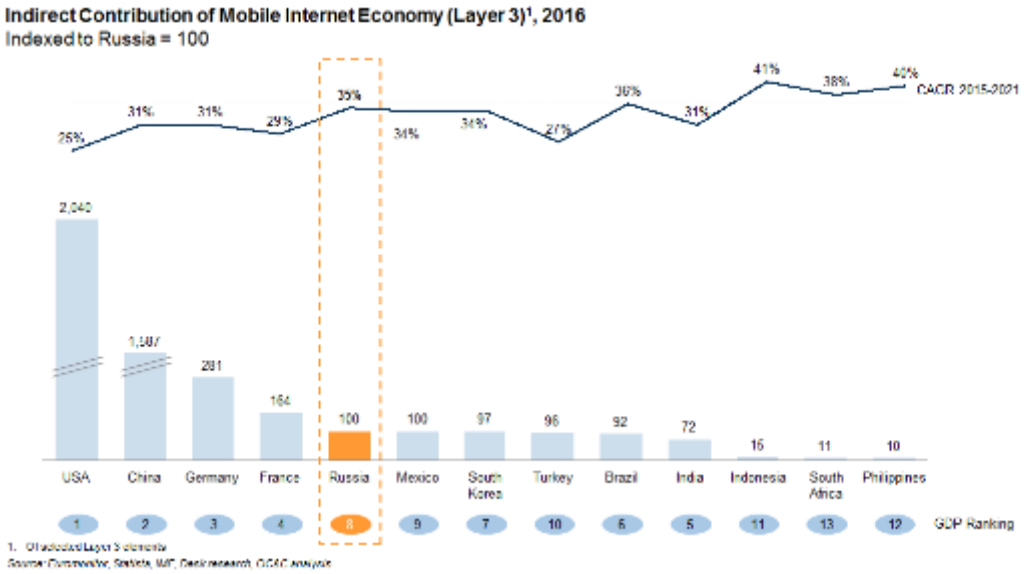
As of 2016, total indirect contribution has generated approx. RUB 1,740bn, with the largest contribution coming from suppliers of Layer 1 companies. Over the next 5 years, this balance will change when Layer 3 generates the largest share. This shift is expected to be driven by 2 main factors;

A. Elements of Layer 3 are currently in very early stages and growth levels of selected use cases are expected to reach up to 71%
B. Layer 2 is pegged to Layer 1 – which for the most part is more mature and experienced slower growth

Mobile Economy Share of GDP, Indirect Contribution
% GDP, RUB bn



It is important to note that, Russia has one of the highest indirect contribution from Mobile Internet Economy. The country is expected to show significant growth in terms of efficiency and sales gains of non-mobile businesses/sectors (fuel efficiency of logistics companies, increased sales of apparel SMEs through Instagram posts/ advertising, improved sales operations of pharma/ FMCG companies), and purely digital enablers (smart meters, smart homes, smart cars, mobile ticketing, mobile payments, etc.) compared to some benchmark countries. 35% p.a growth is expected in this Layer from 2015 to 2021 as opposed to 25% of USA and 31% of China. This large size and further growth expectations can mainly be attributed to:
a) Russian consumers' high digital/ mobile literacy
b) Many companies (both local and international) utilization of innovative and sustainable solutions (such as mobile terminals/ handsets, payments infrastructure, software/ app development, targeted mobile/ digital marketing) for both mobile and non-mobile businesses also supported by an existing advanced developer availability and capability



. Layer 2: Suppliers & Service Providers of Layer 1 Elements

Layer 2 is closely linked to Layer 1; its elements generate value through serving Layer 1 companies by supporting their operation. Since Layer 1's growth is stagnating as some of the largest elements are reaching maturity, Layer 2's growth is also expected to slow down in the future. Existing growth is forecast to come from the burgeoning m-Commerce and App Store elements as well as a certain push from device and hardware manufacturers.

Layer 2 is divided into two different parts: *suppliers* and *service providers* of Layer 1 companies.

A) Suppliers of Layer 1 Companies

The supplier portion of Layer 2 is calculated by using the COGS of direct contribution elements. This layer generated RUB 767 bn in 2016, which is equal to almost 0.9% of the total GDP value and is expected to show 8.4% per annum growth to reach RUB 1,168 bn by 2021. Although it generates the biggest chunk of total indirect contribution in 2016, its growth is expected to slow down due to the maturity of Layer 1 elements.

The growth is mainly driven by the expansion of the suppliers of m-Commerce and app developer elements of Layer 1.

1. App stores and app providers are expected to be the fastest growing element with 38.2% CAGR until 2021. Similarly, third party app developers are the second fastest growing element with 22.4% p.a growth. This shows that app developing scene in Russia is expected to be a key driver for mobile economy by 2021
2. m-Commerce is another major growth pillar for this Layer, growing at 20.9% per annum. The value generated is expected to reach RUB 451 bn by 2021, making m-Commerce the largest value driver of this Layer

B) Service Providers of Layer 1 Companies

Similarly, the service provider portion of Layer 2 is calculated by using the OPEX of Layer 1 elements. This generated RUB 502 bn in 2016, which is equal to 0.59% of total GDP value and is expected to show 7.7% per annum growth to reach RUB 726 bn by 2021.

Growth is mainly driven by m-Commerce and App Stores & App Providers as well as third party app developers. Service providers of App Stores & App Providers companies in particular are expected to show 39.7% growth rate, benefitting from the growth of this segment as all the other Layers. Similarly, m-Commerce is expected to show 20.2% p.a growth within the same term.

As long as mobile plays a substantial and increasing role that it does in the Russian economy, we can be certain that the Layer 2 indirect contribution will increase in line with it.

Layer 3: Business Surplus

Layer 3, the business surplus, has generated RUB 463 bn in 2016 and is expected to grow c.29.2% p.a to reach RUB c.1,669 bn by 2021, making up for c. 1.5% of total GDP by 2021. This layer is expected to grow significantly faster compared to Layer 1 and 2. Although some of the components have developed quickly for the last couple of years, most of the components are in the early stages of their development and promise higher potential in the future. The potential this Layer holds in the Russian market is not even close to be fully realized yet;

1. Despite being quite insignificant at the moment with its RUB 21.2 bn value, FinTech is expected to be the fastest growing indirect contribution bucket with a 2016-21 CAGR of 70.8%. This growth will result this element to reach RUB 308.4 bn by 2021, making it one of the largest contribution buckets within this Layer. This huge effect stems from both increasing number of tech-savvy customers and broadness of free internet area especially in larger cities.
    1. It is important to note that Mobile Payments element of FinTech shows an impressive growth at 82.6% p.a, reaching RUB 9,278 bn in 2021

2. Integration of mobile devices to day to day tasks will be gaining popularity within the next 5 years. Connected Person is expected to show considerable growth with 43.8% per annum growth. Its business equivalent, Connected Company is also growing at 29.0% per annum. Such high growth rates may be dedicated to government support to benefit customers from mobile connectedness, in addition to pure market and customer driven growth
    1. Connected Car, an element under IoT / Consumer & Business, is one of the fastest growing indirect contribution item with a CAGR of 41.9% thanks mostly to ERO-GLONASS initiative, similar to eCall in Europe
    2. Smart metering, an element under of Connected Company, is expected to expand 40.3% per annum in Russia, thanks to Smart Meters and Smart Grids Initiative that Russian government enforces consumers to use smart meters in order to save energy which is the greatest concern of Russian Ministry of Energy.

3. Commercial activities is expected to reach RUB 490 bn by 2021, showing 31% p.a growth during 2016-21 period. This bucket will make up for almost 26% of total Layer 3 by 2021.
    1. Organized SME services is expected to grow 34.6% p.a thanks to increasing number of SMEs signing up the system due to the difficulty of reach higher number of customers in such a wide geography without internet.

4. mServices has generated RUB 53 bn in 2016, and is expected to reach RUB 190 mn by the end of 2021
    1. Food delivery platforms continue to grow 31.3% per annum still have not fully exploit the potential in the country due to wide geography, still hundred-million-dollar acquisition of a Russian delivery platform surely acknowledges this

It is important to note that activities within Layer 3 have been successfully supporting

A. The growth of SMEs from various sectors, mainly by bringing them together and increasing their visibility and providing access to a larger audience.
B. The growth of large enterprises that find a way to use mobile to support conventional way of doing their businesses.

SME aggregation platforms in the respective industry supports SMEs to find customers online thus selling more products and services in return of a certain commission. Consumers benefit from these platforms greatly in selecting the best and fastest service by comparing the available service providers. While doing so, they usually use internet from their mobile devices

1. Service delivery platforms are used by wide range of professions including repairmen, private tutors, couriers, personal trainers and even doctors. These platforms serve as a marketplace for full-time professionals as well as individuals who provide services on the availability of their personal time to generate some extra income. These service providers reach much greater audience through such platforms that would not be possible otherwise. In 2016, these platforms helped SMEs to generate RUB 48.5 bn of additional revenues and this contribution will go up to RUB 214.1 bn by 2021.

2. Food delivery platforms collaborate with restaurants, directing them online orders from clients visiting their platform. Customers use such platforms as they are comprehensive of various options, and offer wide array of services such as order tracking and online payment. Most of the customers would like to order using mobile applications because of its mobility advantage over online website. Furthermore, large geography and different political regions make several platforms benefit from mobile internet instead of a consolidation on a local giant

Delivery club, the number one food delivery company in Russia, serves 64 cities with approximately 4,500 restaurants. The share of mobile orders have reached 72% in 2015, and is only expected to grow further. Considering that the company processes 20k orders each day, presence of this mobile platform brings in a significant number of business to the collaborating restaurants that are fulfilling these orders. The success of Delivery club did not go unnoticed. Mail.Ru Group, leading company in the Russian-speaking Internet market, acquired 100% of Delivery Club in November 2016. The total deal value was USD 100 million

3. Private driving or taxi apps match available drivers in a certain area with demanding customer base. Instead of being idle, the drivers finds a customer via the mobile app. Moreover, the system enables drivers to accept different modes of payments such as mobile wallets and credit cards. This feature attracts the customers who would normally avoid taking a vehicle as they do not carry too much cash. Considering Russia has low passenger cars per capita (not ranked in 50 worldwide), ridesharing will continue gaining importance. In 2016, these services provided drivers with additional RUB c.19.4 bn contribution and expected to reach RUB c. 33.9 bn by 2021.
4.

Ride sharing is a competitive market. Yandex.Taxi is Russia's largest online taxi booking services, now accounts for about 55 per cent of all taxi rides in Moscow with 60,000 drivers in Moscow alone. Yandex Taxi operates more than 50 cities across Russia. Uber and Gett are also important and growing competitors in the market. Uber has 40,000 drivers across 17 major Russian cities. Gett has 36,000 drivers in Russia. Considering RUB 440 bn overall taxi market, online ride sharing represents 5% of overall market and expected to go up further in the next 5 years.

In addition to joining such platforms, many SMEs have created a reflection of their physical boutiques on various social media platforms, where they can showcase their brand and drive user engagement. Using Instagram and various popular local social media channels like VK, OK.ru, these boutiques enjoy reaching a much larger audience and engage with them more frequently. Social media is proved to be a powerful and personalized form of advertising, and bring a real uplift to in-store traffic. In 2016, social media boutiques, generated RUB 78.8 bn, which is expected to reach RUB 275.9 bn by 2021.

In addition to SMEs, mobile also helps large enterprises to create new business models for the ever-transitioning world. These large companies may use mobile complementarily to build on their existing proposition or they may redeploy the existing business model to take advantage of a lower distribution and other operational costs. Besides, presence of mobile help enterprises enlarges their product portfolio, delivering products that would not otherwise exist

1. Banking started to expand beyond its brick-mortar branches. Mobile banking enables customers to complete their financial tasks in a convenient, fast and secure environment. Banks benefit from lower cost of serving customers through their mobile platform. Thanks to wide internet coverage and increasing technology adoption of customers, mobile banking will save its prominent place representing nearly 15% of total banking revenues, contributing RUB 114.0 bn in 2016 to reach 40% of banking revenue contributing RUB 304.0 bn by 2021.
2. Smart metering enables both customers and energy companies to monitor consumption with better precision so customers can make more informed choices in their energy use. Depending on its features, the meter may notify the utility company of a power outage or safety concern as well as fraud and theft, which would create additional savings for these companies. In 2016, smart metering generated RUB 44.2 bn savings in Russia, which is expected to reach to RUB 240.3 bn by 2021.

Russia is pursuing the State policy of innovation activity in the electricity sector. This applies to energy efficiency, renewable energy and smart grids. It is stated in the Energy Strategy of Russia for the period up to 2030. The strategy aims to ensure providing high energy, economic and environmental efficiency in the production, transport, distribution and demand of electricity. (Smart) meters and accounting systems should be installed at all participants of electricity in accordance with the Federal law № 261-FZ dated 23.11.2009.

3. A car is considered "connected" as soon as it has been designed to have direct internet access by factory, thus enabling the car to communicate and exchange information with other connected cars, smartphones, and its surroundings. This category is mainly composed of hardware sales, such as eCall and navigation devices including infotainment and predictive diagnostics services. The so-called eCall describes automatic triggering of an emergency call while simultaneously transmitting relevant data such as the location of the vehicle or the direction of travel. In 2016, connected car services generated approx. RUB 34.5 bn, which is expected to reach up to RUB 198.2 bn by 2021.

eCall and ERA-GLONASS are European and Russian initiatives respectively, to combine mobile communications and satellite positioning to provide rapid assistance to motorists in the event of a collision. The system is designed for use with the global satellite navigation system GLONASS on behalf of the Government of the Russian Federation. From January 1, 2015, transportation in the Customs Union (Russia, Belarus, Kazakhstan) that go through the type approval procedure for the first time will be equipped with on-board units supported by ERA-GLONASS. From 2017, the requirement will apply to all transportation sold in the Customs Union.

The overall indirect contribution surpassed the scale of the direct contribution of the mobile economy years ago. The growth of the indirect contribution will mainly be driven by Layer 3, as new business lines and structures continue to emerge and blossom.

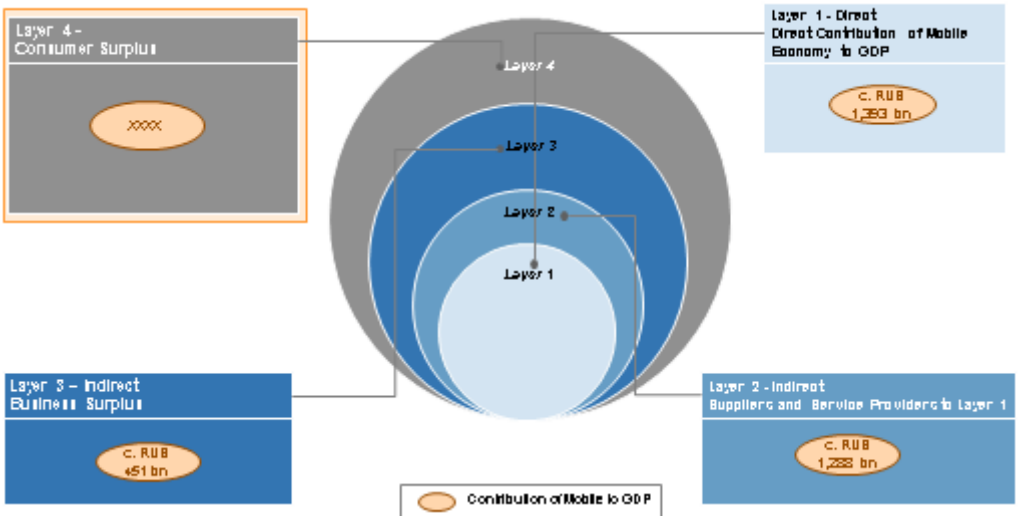
Impact on Consumers

Although the overall study aims to understand the size and impact of Mobile Internet Economy to GDP; Mobile Internet also creates “surplus” within the daily lives of the consumer. We define a Layer 4, Consumer Surplus, which is defined as the benefits received by consumers from the use of mobile devices and their connectivity, minus the total costs of owning a connected mobile phone.

Consumer Surplus

Aside from its large impact on industry, the mobile economy has also transformed the lives of the consumers. In order to understand how important mobile technologies are in consumers’ lives, we have conducted a two-section research. One section quantifies the perceived value of mobile privileges in RUB terms based upon a highly rigorous survey methodology, while the other section gains an understanding of this importance in qualitative terms. The results are drawn from 1,008 respondents.

Based on the given responses, Russian consumers are the real winners among the layers of the mobile ecosystem, despite the far-ranging impact on business due to mobile devices and their value chain. Consumers claim 77% of the benefits of the whole mobile economy – RUB 5,208 bn in total over the year 2016-17.



The total net value is the value consumers place on their access to the mobile economy is calculated as follows:

- Total value assigned to mobile

- Minus costs of mobile ownership

The total value assigned is calculated in a granular manner across three buckets:

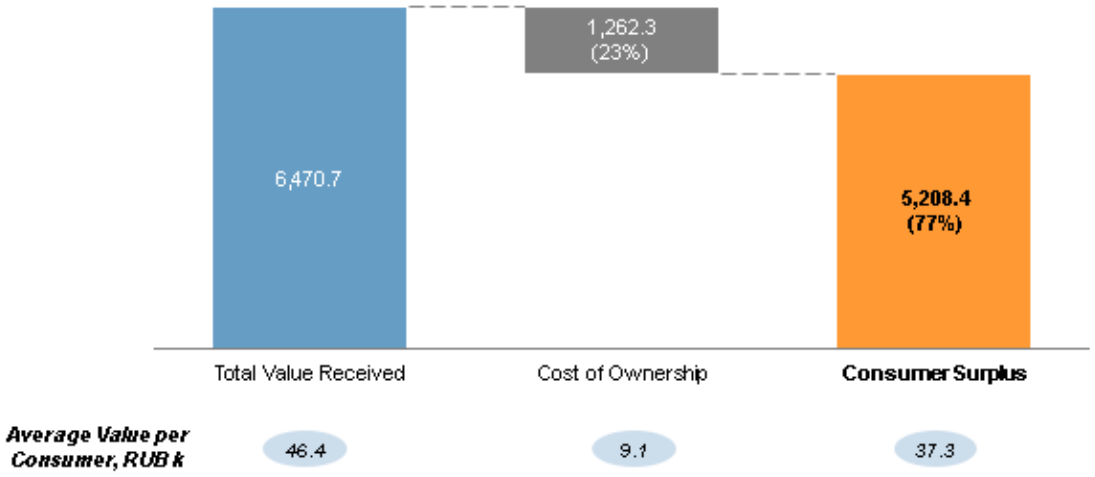
1. The mobile internet (all benefits enabled by 3G/4G and Wi-Fi connections)

2. Offline connectivity (eg Voice and SMS features)

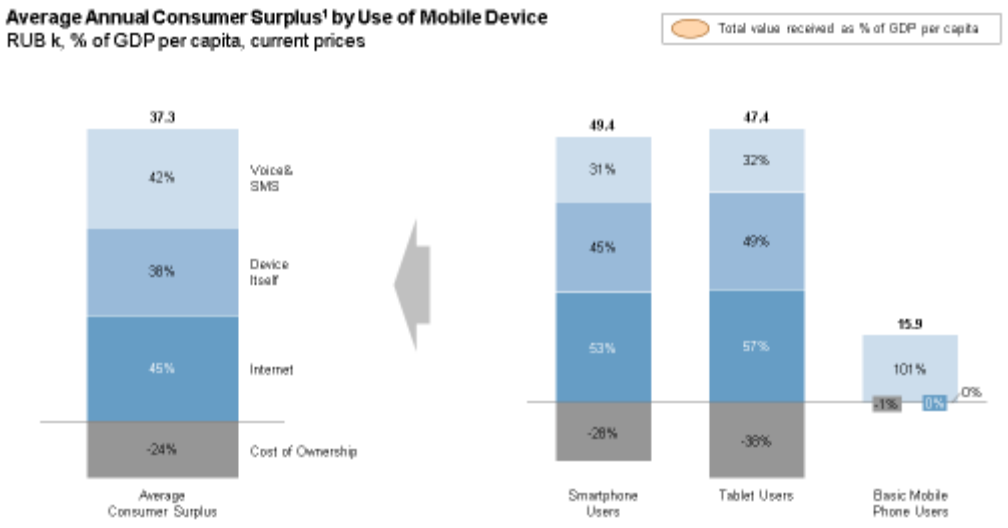
3. The device itself (all benefits provided by other features of mobile devices eg brand name, screen size, camera etc.

This is obviously not something that you can ask a consumer directly – the thought process is too complex. Therefore, our study has employed a highly sophisticated 'conjoint analysis' in order to tease out the true value that a consumer places on their interactions with the mobile economy. We surveyed over 1,000 people and asked an array of questions that explore the trade-offs they would make between aspects of mobile device usage and cash prizes. This enables us to explore the consumer's hierarchy of mobile economy related needs as well as how this translates into monetary values. We also ask a long list of questions in order to comprehensively calculate all costs stemming from owning and using mobile devices – device costs, connectivity costs, and other mobile-related purchases

Using this methodology, we find that although the average Russian consumer spends RUB 9.1 k on mobile devices and usage over a period of one year, this enables them to derive rub 46.4 k of benefits. That provides them with a consumer surplus of RUB 37.3 k – over four times as large as the costs of ownership. At a population and penetration level, this translates into RUB 6,471 bn of total benefits accrued at a cost of RUB 1,262 bn. Much of this RUB 6,471bn will feature in the direct contribution of the mobile economy to GDP.

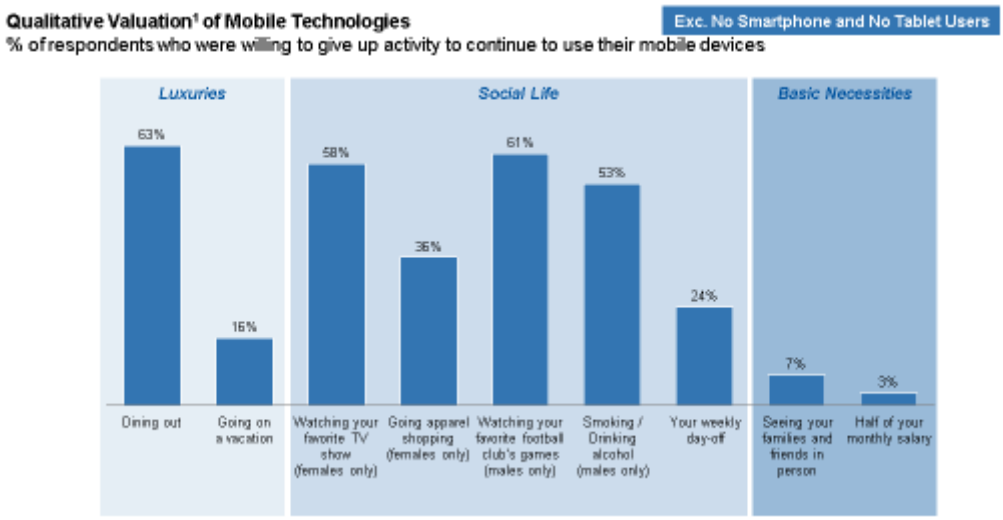


Consumers derive value from a variety of aspects of their mobile device – there is not one clear feature that is the source of all benefits. Internet is the leading benefit, contributing 45% of the consumer surplus, but the device itself and voice & SMS are not far behind with 38% and 42% contributed respectively.



Comparing smartphones and tablets, both devices are almost equal value in consumers' eye, creating RUB 49.4 bn and RUB 47.4 bn surplus respectively. This is largely due to the fact that most tablet owners have SIM cards installed to their devices, making them almost a secondary smartphone. This trend is also visible among the survey respondents: 65% of the tablet owners have SIM cards in their devices. Therefore, value created through Internet, voice & SMS and device itself shows a similar distribution between two devices. While Internet generates the highest value, 53% in smartphones and 57% in tablets respectively, voice & SMS generates the lowest value with 31% and 32% share.

Majority of the Russian population owns a smartphone, or SIM card enabled tablet that functions just like a smartphone. For example, 97% of survey respondents claims to have a smartphone, while only 34% owns a feature phone. Among those 340 feature phone owners, 94% owns a smartphone; meaning that the feature phone is mainly used as second SIM card. Out of the remaining 6%, 57% owns a tablet with a SIM card. This leaves only a small portion of respondents with absolutely no device that could pass as a smartphone.



Consumers were also asked to indicate the importance of their mobile phone in a qualitative sense. The results highlight the indispensable part of life that mobile technologies have become. For a substantial minority of consumers, retaining mobile device usage trumps recreational activities such as dining out (63% would give up), watching a favourite TV show (58% of females) or watching the football matches of a favourite team (51% of males). 24% state they would even give up their weekly day-off from work.

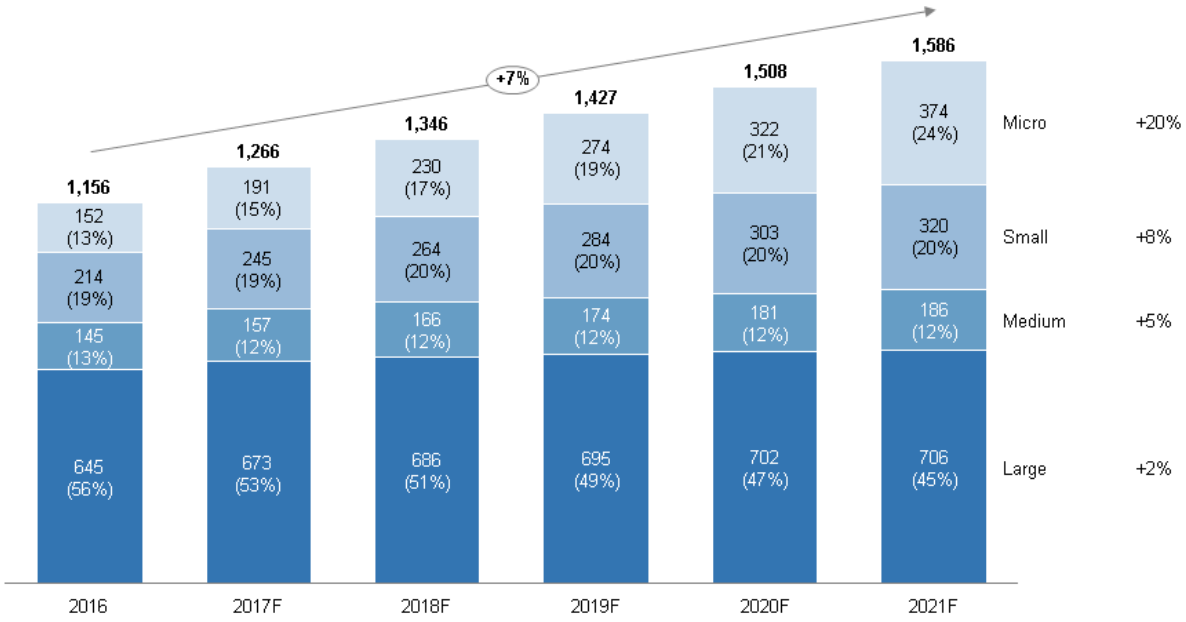
Some people would forsake basic necessities in order to keep hold of their mobile device. 3% would sacrifice half of their monthly salary, showing that the benefits of mobile devices stretch way above the

calculated average consumer surplus for some users. Mobile devices have even overtaken human contact in importance for a small minority, with 7% willing to not see their family or friends in person in exchange for retaining access to their mobile device.

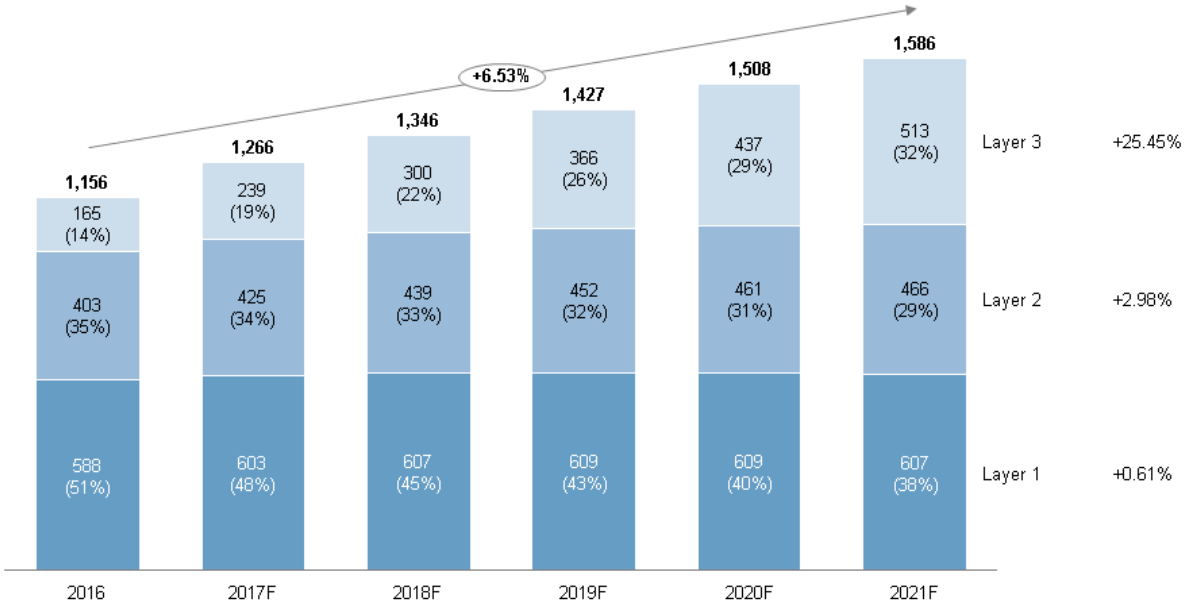
It is no assertion to say that the benefits consumers derive will increase significantly in the near future as mobile economy develops in sophistication, with innovation and increased adoption bringing a mobile element into more and more activities. Smartphones or tablets will become the de facto point of interaction with retailers, transportation systems, loved ones, colleagues, media, entertainment content, shared economy services, restaurants and any number of other areas of people's lives in the future. When the mobile device becomes the enabler of so much of someone's day to day activities, it is no surprise that consumers will sacrifice much to keep hold of it.

Impact on Employment

The last few years' economic set-back in Russia caused employment figures to go down by approximately 0.9m (according to data from Rosstat - for legal entities and individual enterprises; i.e. excluding government and household activities) from 2014 to 2016. In 2016, the mobile economy in Russia has generated RUB 3,229 bn in value, which is equal to 3.8% of total GDP. Such considerable output also makes the mobile industry a key driver of employment across the region. Based on this value generated, the industry has employed approximately 1.1 million people in 2016, of which 55% were in enterprise.



In the next five years, 430k new jobs are expected to be created within the mobile economy in Russia (of which 348k of this is supported by Layer 3 companies). These figures translate into 6.5% per annum growth during 2016-21 period, bringing the total number of jobs created to 1.6 million by 2021. This means that mobile economy alone will cover half of the jobs lost during the economic downturn. It is also important to note that employment in micro size cluster is expected to be the fastest growing size cluster with 20% CAGR, as Layer 3 companies are purely driven by mobile and mostly entrepreneurs/ micro businesses.



Layer 1: 51% of the current 1.2 million jobs created are coming from Layer 1 – the direct contribution to the mobile economy.

1. MNOs & ISPs generated 55.4% of the jobs created, due to their size and prominence in Russia.
2. Although app developers constitute a small portion of jobs created in 2016, it is expected to grow rapidly with a yearly rate of approx. 38.4% on average.

Layer 2: As, for example, mCommerce companies do more and more trade, they will also need to spend more on marketing agencies, more on packaging and of course buy or produce a greater quantity of the products that they sell. All of this extra spend will be a boom for the companies in Layer 2 which are suppliers to them, or provide them with services. They will have to bring on more staff to meet the demand of their Layer 1 customers, and this is true of all elements in Layer 1. A few elements in these layers stand out in terms of growth;

1. m-Commerce will create the largest sum of jobs among Layer 2 elements, providing 87,292 new openings by 2021
2. MNO's continue to be a supporting block for the industry, creating the second largest number of jobs

Layer 3: Layer 3 currently has a fairly small impact on employment, with creating only the 14% of total jobs created through mobile. This share translates into 165 million jobs, almost 1/3rd of Layer 1 figures. However, as the adoption and use of mobile technology becomes more widespread, the sales/productivity impact of Layer 3 is expected to show a multiplier effect. We will see the creation of new areas of activity within Layer 3 as businesses innovate, while increasing the value of the ones that are currently present. Therefore, although it currently creates the fewest jobs, it is expected to catch up with the other layers quickly: it is the fastest growing Layer with 25.4% per annum growth. It is forecast to reach approx. 513 000 jobs by 2021, surpassing Layer 2 with a few years to catch up with Layer 1 in terms of job creation.

Further Growth Prospects - Growth Beyond Borders

Growing the mobile economy more quickly should be a priority. As the total mobile contribution to GDP increases, more and more workers will be brought into the mobile economy. This would reap strong benefits on Russia's jobs market. There are a number of areas of policy that the state could address in order to help maximize further growth.

Talent availability

Currently, Russia has a significant reserve of software development resources, mainly skilled workers, available for use. The country offers a strong fundamental education in IT-related fields as mathematics, physics and other domains; and attracts students to computing related fields. Its reputable universities and

higher learning institutes graduate many students in IT and engineering fields every year, increasing the talent pool. These skilled workers are not only stationed in Moscow, they are spread across other cities as well; increasing geographical presence of this talent. Moreover, today's young and middle age managers and specialists who work in hi-tech companies have the same or higher level of education, English language skills and motivation as their European colleagues, which is beneficial for global companies looking to outsource services or conduct business in Russia.

In addition to the availability of talent, Russian programmers possess all the needed up-to-date technical skills. All the global technical literature is available in English and localized versions, making it easier to access knowledge. Over recent year's Russian student and school programming teams have consistently beaten their competitors from all over the world in closely watched international competitions. Local providers understand the meaning of keeping abreast of all developments in the field and take the requisite preparatory steps: they organize specialized technical libraries and invite leading specialist to give special lectures on the latest trends and technologies. In addition, there are a number of certification centres from Sun, Microsoft, Novell as a well as independent authorities for developers to constantly improve their knowledge and their profile.

However, certain additional investments towards talent will further assist to keep this pool sufficient with expected future growth in the sector and constantly rising global standards. One of the best strategies to do so is investing in the education system. Updating curriculum with new technologies and incentivizing students to focus on digital education are the two most important steps to take in this area.

Russia has been incorporating new educational programs in order to increase the digital literacy of youth at an early age by adopting technology as one of the main tools of education. It is one of the first countries to incorporate ICT as a part of the national education curriculum. Basics of computer literacy are though in primary school and ICT focus peaks in secondary school with extra focus on developing coding and software development capabilities. Although majority of the programs are directed towards students to help them gain nativity towards mobile devices and its components, teachers also undergo intense trainings and monitoring to make sure they can prepare their students for the world of technology. For example, a program named "Developing IT in the Educational System" has been implemented by the Russian office of the World Bank, aiming to create and spread new electronic teaching materials and to train teachers on how to effectively use them. Another program called Intel Tech has been running since 2002, aiming to show teachers how to successfully use ICT to support improved teaching and learning methods in the classroom.

Similarly, the country has been working on updating its schools to a high standard of technology. Various tools and resources are constantly provided to support teachers in creation and use of information, information retrieval, digital data analysis and modelling. There are ongoing efforts for bringing broadband connectivity to all schools. Since 2008, a project run by Intel and Volneo Deleo (charity foundation) called "Computers for Students" provided students in representative schools to receive a notebook to use in their classes. By 2018, an extensive project called Moscow Online School Project, which allows students to do distance learning through digitalization of all educational materials, is expected to be included in all schools in Moscow.

Most companies state that they are competing for best talent even now with ample number of graduates available. There are a significant number of successful (sometimes even more successful than international giants that operate in the same field) Russian technology companies in the market and they are growing very fast, increasing the need for available talent. This competition is going to be even more fierce – resulting either in increased cost of talent and/or import of talent elsewhere if various cautions are not taken. However, improvements show Russia's commitment in developing its IT talent pool, which would be the biggest driver for the country to be world's next technology hub in East.

Flourishing Tech-Enabled Environment

As discussed throughout the paper, Russia is home to a significant number of well-educated and talented developers, engineers, designers and IT specialists. It is important to note that this talent pool is not only employed by sectors that have IT at heart; many of them are using their talents under the roof of non-IT businesses and sectors. Gaining cross-sector insights and experience, merged with their IT knowledge surely accelerates the tech integration of these businesses and sectors. For instance, payments, a sector that was far from being mobile-related a short while ago, is now one of the largest revenue driving mobile category. Many other "hot" mobile sectors such as commerce, healthcare and education was once far from being close to any technology in its front end. Even for sectors that are not yet branched out to become a mobile category, they surely benefit from the presence of these talents in order to increase their efficiency or innovate the way they conduct their businesses. As such, it is only natural to expect that this dynamic drives the rapid mobilization of many Russian businesses/business sectors and motivates for constant innovation that positively improve these businesses and consumers' lives. This means that from startups

to existing corporate giants, business world is becoming more and more mobile oriented with each passing day.

Despite its significant growth in the recent years, the size of the Russian application market is still way under its potential. Smartphone sales are growing fast, but the share of smartphone owners (50%) is significantly lower compared to Europe and United States. Moreover, monetization is difficult as app stores accept payments only through bank or credit cards, and such uses of digital payments has not been widely accepted in the country yet. Therefore, most developers have been successfully expanding to international markets to derive more value for their product.

These content companies started to adapt and market their traditional mobile content such as ringtones, themes and Java games, to various target markets. Local game developers have managed to rank in top 10 of many countries in terms of combined App Store and Google Play revenues in 2016 Dynamic Pixels and Herocraft are some of the largest traditional mobile content companies that has reached over millions of downloads in European markets. Founded in Moscow in 2005 as a mobile development studio, G5 Entertainment is now a global company developing mobile and PC games on a massive scale, with international successes such as Stand O'Food, Virtual City Playground and Supermarket Mania 2. Although, US is the largest single market for Russian game app downloads, Google-play dominated emerging markets such as Brazil, Mexico and Turkey are rising rapidly as key markets. Today, such content generates millions of dollars to Russian app developers.

In recent years, many of these developers anticipated that the market for these traditional content will slow down; therefore they started to switch producing new generation content where they face less competition and their transferable skills can create a competitive difference; and these new generation mobile games and apps have started a transformation for a faster mobile integration into consumers' lives. Through global stores such as the Apple App Store or the Android Market, Russian developers found new markets for any viable idea they have, which motivates them to think out-of-the box, create and put their skills into use. Their vision and practice has now become global. For instance, iFree, creator of many top grossing games has reached its biggest international success with Pocket Blonde; "a pioneering app in a product line that enables smartphones to lodge no less smart digital creatures". Similarly, lifestyle apps such as Prisma and Hotellook have become international hits. Other companies, like Dasuppa, completely stopped producing traditional games, putting all resources into new generation products. All these Russian companies are now switching into more sophisticated level of app and software development.

Such vivid developer and startup environment in Russia makes it possible to also innovate within the country, especially in mobile. As expected, content is very rich and constantly improving for mobile consumers. This is the primary reason why currently nascent Layer 3 is expected to grow significantly, by adding new businesses and new ways to make money in embryonic sectors such as mobile banking, mobile financial services/ payments, smart homes. Their vision and talent lead to constant innovation, positively improving businesses and people's lives.

Attractiveness for Talent & Foreign Business

Russia is an attractive country for developers both looking to start their own business, or to work at different companies/projects. It is not a coincidence that there is recognition for Russia and its IT environment among developers. The job market presents ample opportunities for developers, software specialists and other IT workers due to the high-tech nature of most businesses in the country. The country is a strong suit in military, space, oil & gas, which are highly IT ***dependent*** sectors that hires many candidates each year. In 2016, its capital Moscow was ranked among the world's top tech hubs compiled by Expert Market. It was seventh in terms of time needed to start a business, and eighth in terms of access to seed funding. As discussed, app/software developing and IT services is ***booming, constantly*** providing attractive opportunities both through international and local champion apps. There is a large start up ecosystem that is strongly supported by government as well as many accelerators and seed funds.

In addition, the country has a strong outsourcing scene where many international companies outsource their IT-related needs due to low cost of doing business despite the high quality of work. For example, an average developer is paid 3 times less than its European colleagues due to living standards in the country and the devaluation of Ruble. There are ***many*** self-employed IT specialists who provide distance IT services to foreign companies. These specialists make significantly more thanks to the difference in local and European salaries, and in currency-exchange rates. "A qualified remote IT services provider working for a Western firm can make $2,000-$3,000 per month. That is up to eight times the average salary for the local region, and double what IT specialists can earn working for Russian companies". This is a good incentive to prevent brain drain as these developers have better standard of living with their earnings than

they would have in another country. Many local developers have connections with international markets and are actively exporting their IT services. “According to the non-profit partnership, Russoft, in the past seven years Russian software exports increased threefold, from $2.7 billion in 2009 to $7.6 billion in 2016. In comparison, the volume of Russia's most profitable export, weapons, is estimated at about $15 billion annually”. There are successful examples of sales of Russian IT solutions in various sectors such as banking, business analysis, call centers, virtualization and clouding.

The country is also advantageous in terms of location. The major development centers are located in in the European region - St.-Petersburg, Moscow, N.Novgorod. It takes 3 hours to fly from Paris or Berlin and 8 hours from the USA to reach Moscow or St.-Petersburg. Russian offshore software development companies normally compensate for the time difference with their European and even American clientele by adjusting their working schedules to have maximal overlapping hours for mutual contact.

Localization & Local Champions

The country presents geographic challenges for distribution and advertisement and cultural challenges for product adaptation and expansion. Therefore, there is a competitive local player in key Mobile Internet Economy categories:

- Search/ Browsers: According to latest TNS data published on April 2016, Russia’s reference for web audience measurement, Yandex is the leader in terms of daily audience accessing its services from all types of devices, with 12.3 million people using at least one of its services within a 24-hour period. Google finished in third place with 11 million users per day in average. Google’s traction is particularly strong among mobile users, with 16.35 million users accessing its services via apps or web mobile in April 2016 — compared to 13.73 million for Vkontakte and 13.38 million for Yandex. Yandex remains, by far, the leader among those using PCs and notebooks, with 54.35 million users in April 2016. Google services were used by just 43.66 million such users.
- Content Providers: Rambler & Co has become the market leader in mobile advertising with its unbeatable content – even by international players
- Taxi/ Ridesharing: As of 2016, Yandex had 15,000 taxis registered in Moscow and 25,000 in other 16 cities, compared to approximately 4,000 Ubers currently present only in Moscow and St. Petersburg. According to Merrill Lynch, 55% of all taxi rides in Moscow is accounted by Yandex Taxi, while the remaining 45% is shared between Uber and Gett.
- Mail/ Food Delivery etc.: Mail.ru has started to invest in this area and is expecting to experience certain growth in this category.
- Online/ Mobile checkout/ wallet: Yandex Money is the largest online/ mobile payment initiative in Russia. Although PayPal is also active; they do focus on international payments and extending Russian businesses reach to foreign geographies while Yandex Money focuses more on domestic transactions.

In all these cases, both local and international players have been able find certain ground for growth. Some of them targeted niche groups, some of them tried to capture larger audiences - but global players that could reach a certain scale are those that understood Russian consumers and regulations very well and adapted accordingly. Online payments giant PayPal, believes that Russian market is generous enough to accommodate both a national champion and international player since there are different and large customer segments that companies can choose as their playgrounds.

It is important to highlight that, one of the main drivers for the development of local champions in tech industry in general is Russia’s ongoing dedication to IT education and literacy, creating a valuable talent pool that can create and produce quality products and services that are compatible of those international companies. This may also be the reason why there are many Russian technology giants whereas there are none local smartphone manufacturers.

International Influence

For a tech company, going international is not easy as distribution requires great effort and localization. However, some Russian app and game developers have managed to become global leaders in their respective industries also due to the availability of platforms like Google Play. However, expansion (CIS) is

a more common theme in the mobile economy and usually within short-term strategic plans – if not already existing.

Many gamers and app developers undertake their developing initiatives in Russia, although many of them hold accounts abroad. Certain countries such as India and UK has decided to make an agreement with such foreign-based companies or simply imply a certain tax rate to allow these companies operate in their country. Russia has adopted a similar strategy. In order to collect more return and protect competitive advantage of domestic developers, in 2016 the Russian authorities passed the initiative on charging the value added tax (VAT) over foreign IT services and software products that are sold in Russia. The initiative forced foreign IT companies to charge VAT to users in Russia starting January 1, 2017. The new taxation practice increased the price of digital products for the customers overall, decreasing the ability of Russian users to purchase IT services and software than before.

Game changers

Some players in the tech industry, regardless of being local or international, have changed their respective markets structurally:

Before AliExpress, Russian consumers were afraid of trying e-commerce as they felt insecure to purchase products through online or mobile channels. However, the spread of AliExpress have helped consumers break this reservation, and adopted them to the era of online purchasing.

Government Support

Major state modernization programs such as the concept of Satellite Communication Development, Cellular Mobile Communication development, Electronic Russia (eRussia) and the Development of the Common Education Information Space (eEducation) have created a wide range of job opportunities in the hardware, software and services markets. In addition, the share reserved to the research and development of the ICT sector in the total costs of scientific research and development increased from 1.3% to 3.7% in the past 5 years. The government started providing tax shields, offering tax reduction benefits in many special economic zones. Tax rates may be reduced up to 0% until 2018 in Technology & Innovation Special Economic Zones. In 2010, Skolkovo Innovation Center - dubbed “Russia’s Silicon Valley” – was established in collaboration with many global tech giants such as Boeing, Google, Microsoft and Intel. The center targets technological innovation for several industries including Information Technologies by offering free services and consulting to its participants as well as tax exemptions. Moreover, the government provides an extensive array of support packages. Many of them focus around research and development to fuel innovation and creation. Given access to the global expertise, available public contributions for project funding and tax exemptions enable start-ups and more established businesses to go through the discovery process around a new idea or market.

In addition, educational system is being revised to create necessary conditions to support scientific, technical and innovation cycles. The Federal Targeted Program (FTP) managed by Ministry of Education and Science, is a funding program for R&D research in Priority Fields including ICT, and available from 2014 to 2020.

All these initiatives support the suggestion that, given certain improvements in policies and communication, the Russian mobile economy can become as large and extensive as even the largest Western European countries.

Conclusion

Russia has an immense potential to become a world leader in the mobile field. It may soon no longer be known as a country whose growth depends solely on oil and natural gas sectors. The future Russia could be a tech powerhouse rivaling the brain trust and talents of Silicon Valley.

Unlike other countries, Russia possesses a prized talent pool that is slowly transforming the country into a qualified labor and intellectual hub for international IT companies. There is a strong tech entrepreneur environment in place with support from education system, unlike other European countries such as Germany, France, Italy, Turkey; where entrepreneurship happens mostly in retail & leisure. While the country is transforming, the entrepreneurs become more and more crucial to the economy and employment.

As consumer engagement with the mobile economy continues, the scale of the market available through mobile devices will grow in step. A virtuous circle can be created for the mobile economy, where more services and business models adapt to take advantage of the mobile phone. As the number of ways to utilize mobile devices increases, consumers will increasingly look first to their phones or tablets when they want to accomplish something. This increases the audience on mobile devices further, making migration to mobile platforms even more attractive for established businesses and entrepreneurs.