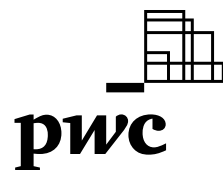


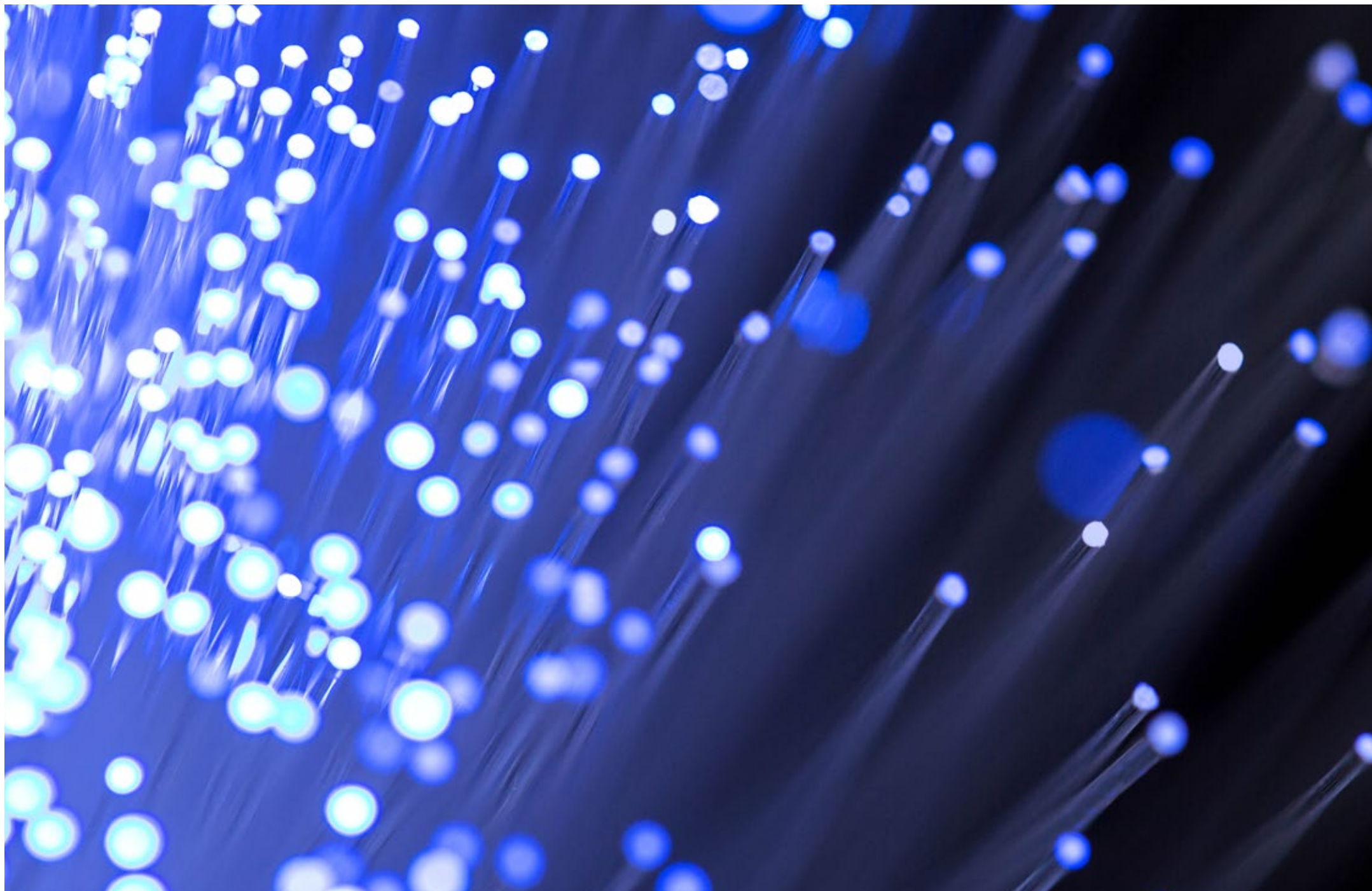


5G

Opportunities & challenges

Unleash the potential





Contents

Objectives & Methodology	05
A. The Current State	06
B. Awareness	12
C1. 5G Engagement	16
C2. 5G, but why?	21
C3: How far would you go to get 5G?	22
D. 5G Deployment challenges	25
Conclusions	28
Biographies	30



Objectives

The next generation of wireless networks referred to as 5G, are expected to be deployed by operators in the next decade. 5G networks will feature faster speeds, will offer quicker response times, easier installation, increased reliability and coverage compared to current networks.

With the public auction for the required radio frequencies deploy completed, Telcos in Cyprus are gearing up for what is expected to be a significant investment in deploying their 5G networks . Although the anticipated benefits will drive this investment, there are also challenges that must be overcome.

PwC Cyprus and the University of Nicosia conducted a survey aiming to capture the level of awareness and level of engagement of the local ecosystem towards this new technology.

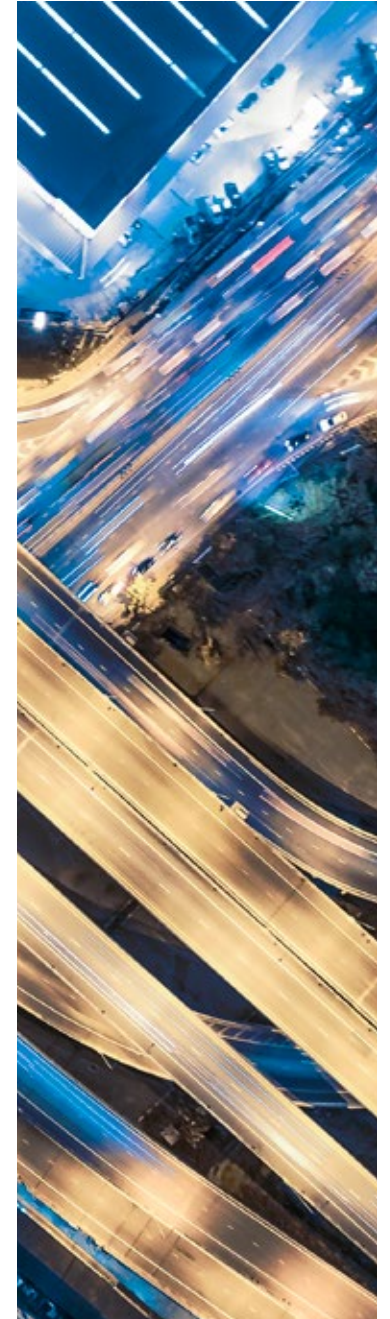
Methodology

We have asked more than 500 home and mobile internet users to participate in our survey and the response rate was 90% (449 respondents). The questions asked were classified into several categories:

- The current state – Capturing the level of user's satisfaction with services provided by local Telcos, utilizing their current infrastructure
- Awareness – Capturing the level of awareness of consumers in Cyprus regarding 5G
- Engagement – Capturing consumer engagement in Cyprus around 5G
- Concerns – Documenting the key concerns of consumers in Cyprus with the upcoming 5G deployment



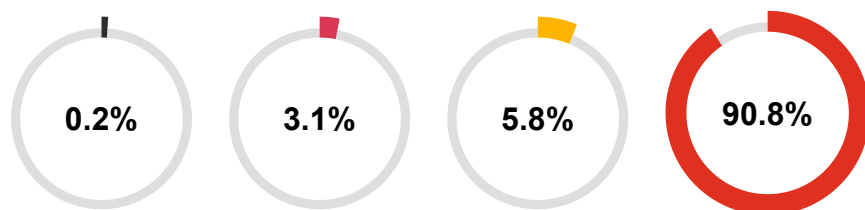
A. The Current State



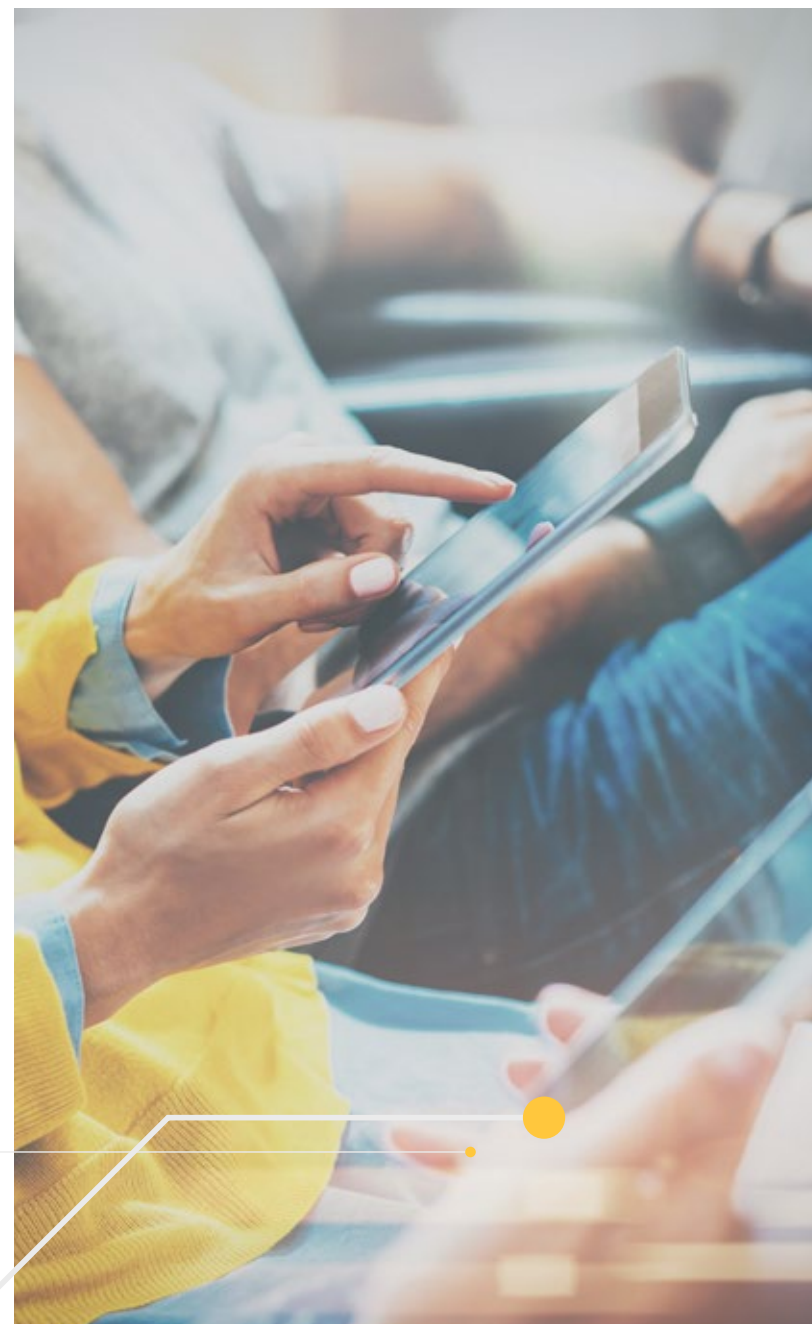
Cypriots are on-line!

According to the survey almost all the respondents, 99.8% have internet access (either fixed or mobile internet) and most importantly, 91% of them have internet access via both a fixed and a mobile connection.

Do you have internet access?



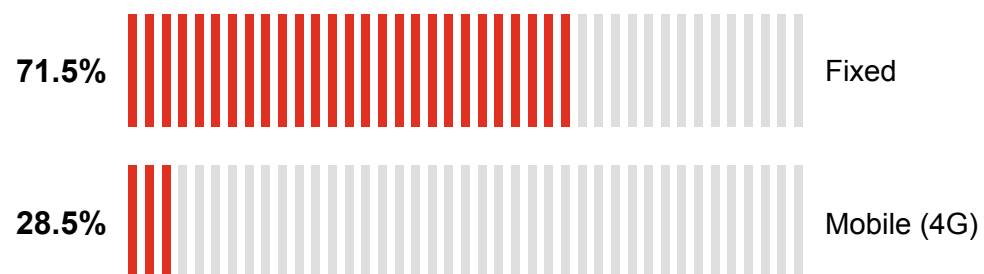
● None ● Mobile ● Fixed ● Both



Tied to the cable!

The survey also revealed that 71% of the respondents considered fixed connection as their current primary internet connection.

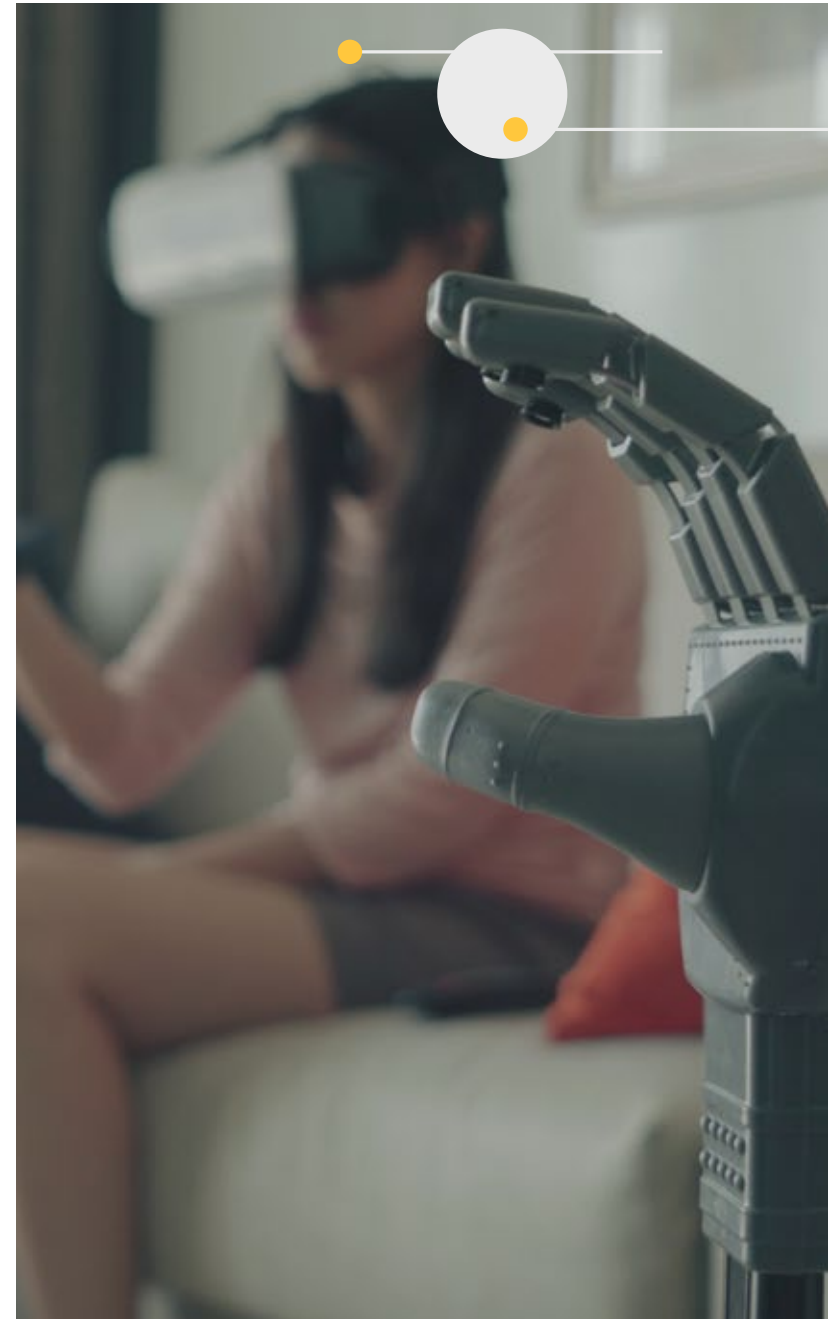
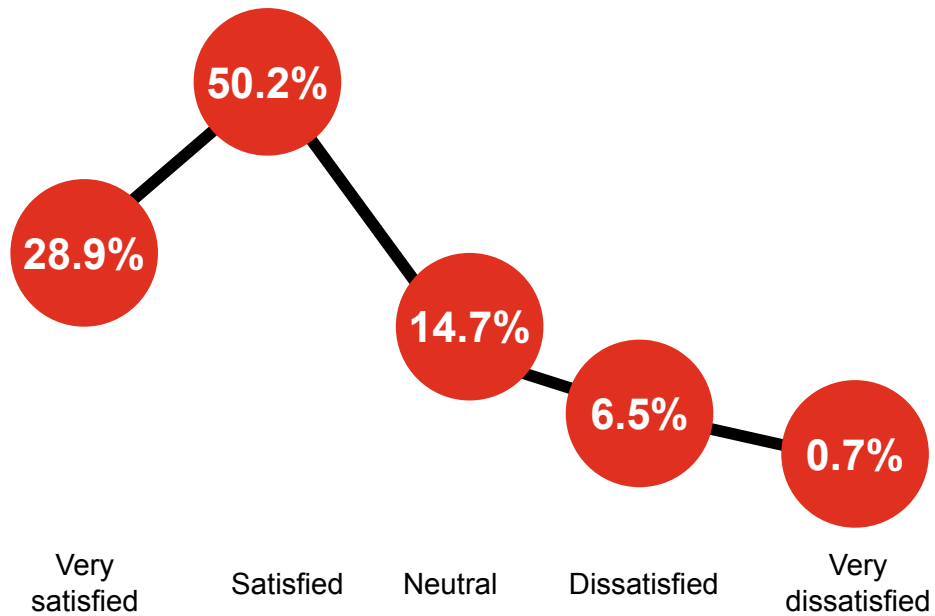
What do you consider your current primary connection to the WWW?



If it ain't broke...

Among respondents, overall satisfaction with current internet services is high, with more than 78% of users at least somewhat satisfied with their primary internet connection.

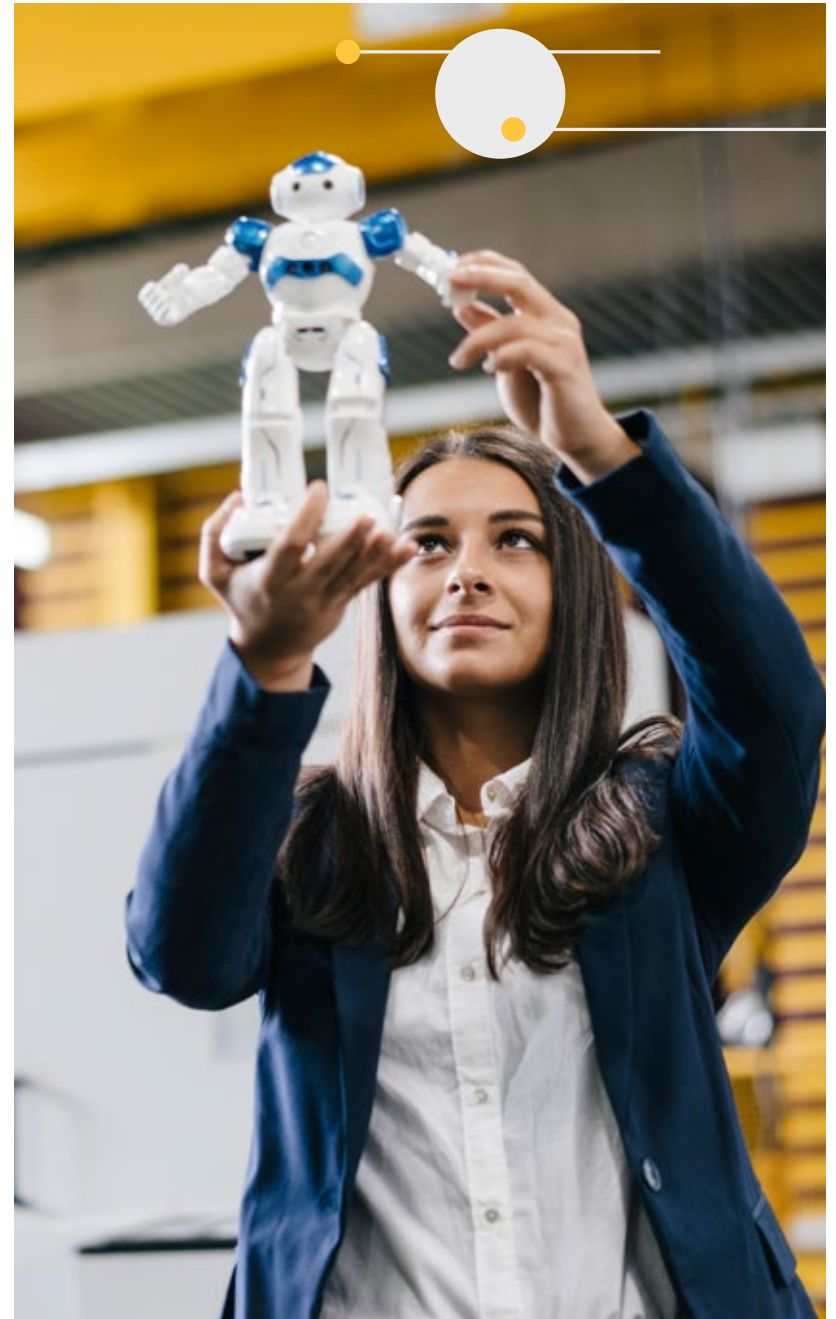
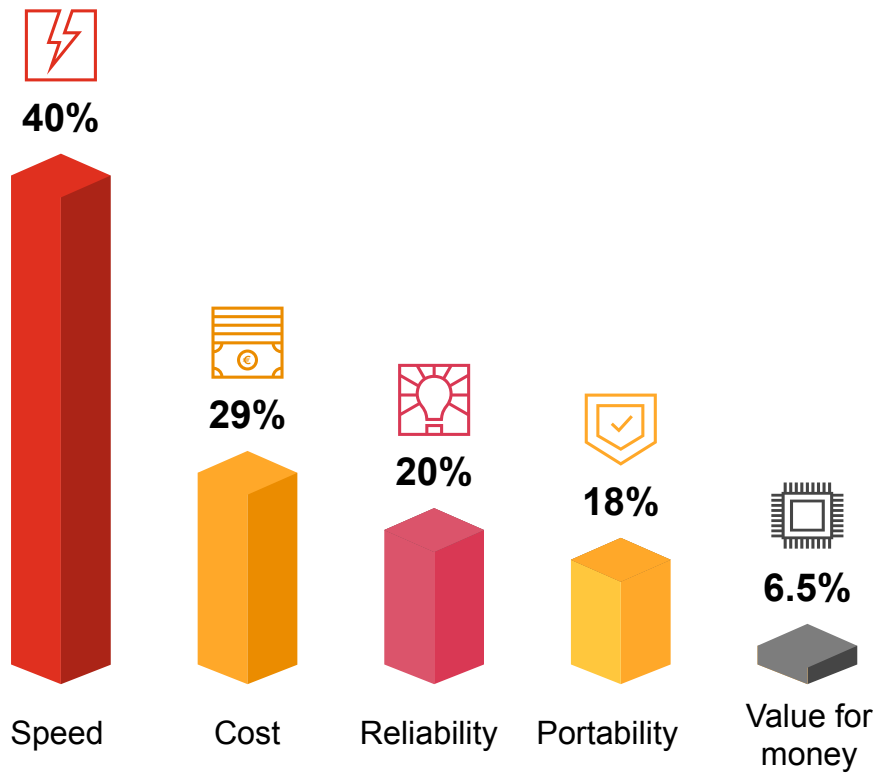
What is the level of satisfaction with your current primary connection?



If it ain't broke, make it better...but how?

The current, high level of satisfaction sets the bar high for 5G implementations. So how would “better” look in the eyes of the consumer?

Users considered the following as the most important features for improving their internet connection.



In consumers' own words

“

The current technology in place is good enough and there is no need to adopt to something new.

(Female 31-40)

“

5G doesn't pose health risks. The International Commission on Non-Ionizing Radiation Protection and World Health Organisation both confirm this in numerous sources.

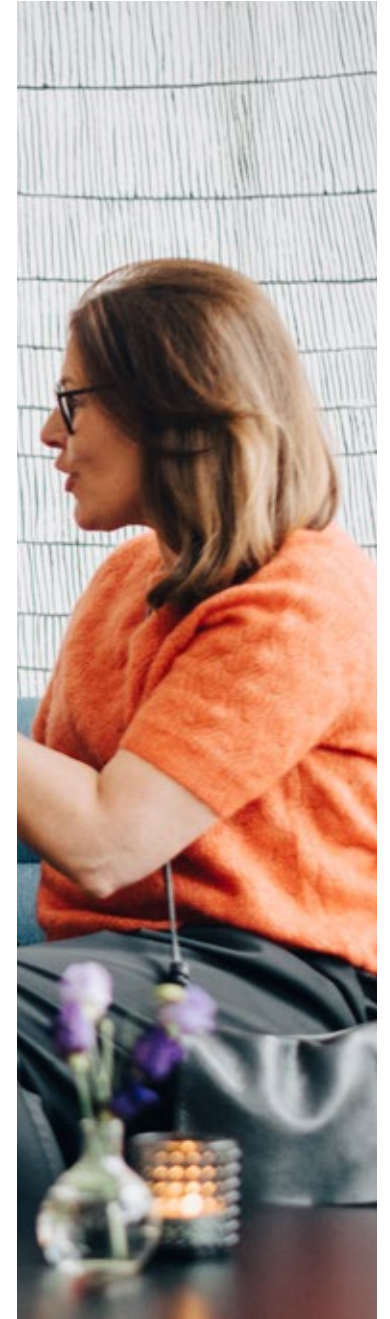
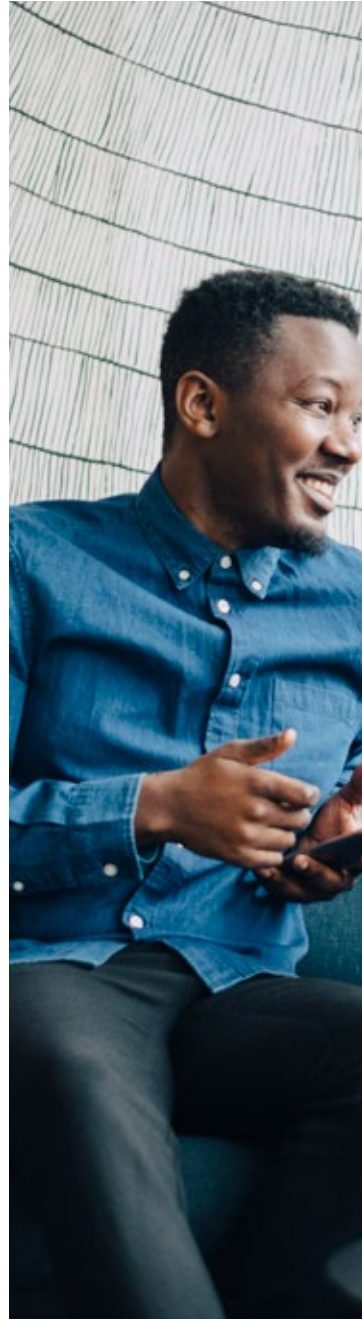
(Male 21-30)

“

I consider 5G a big improvement in technology, but due the potential health risk, its deployment should be thought twice.

(Female 51-60)

B. Awareness



It's 2021, people already know!

Cypriots may still favor their fixed internet connections but that does not mean that they don't know what Mobile Data is. The survey recorded very high familiarity with the term 'Mobile Data' at a staggering percentage of 97%.

Are you familiar with the term "mobile Data"?



First job well done!

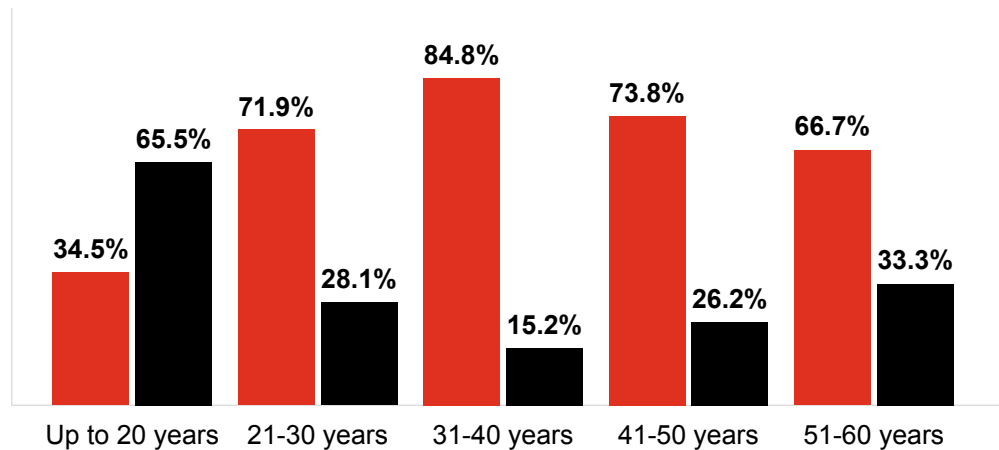
It's impossible to "sell" something "unknown" to consumers.

A very high 72.4% of respondents are familiar with the term "5G" with awareness measuring higher in urban areas. Most of the unfamiliar respondents belong to the age group of under 20 years old and above 50 years old.

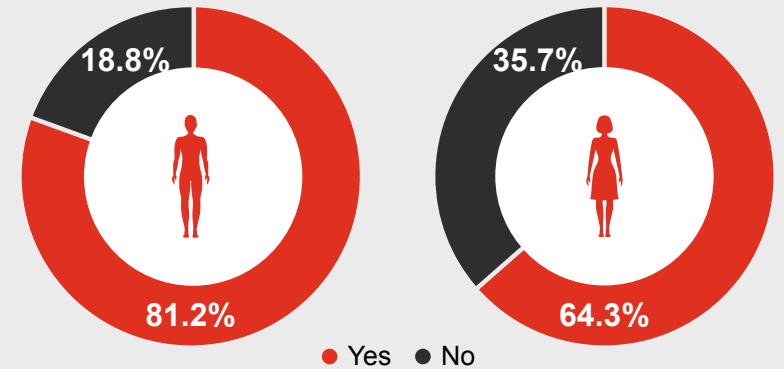
But is it a finished job? Awareness is never enough, engagement is not possible unless a need is established and the concerns are addressed, so read on!

Are you familiar with 5G?

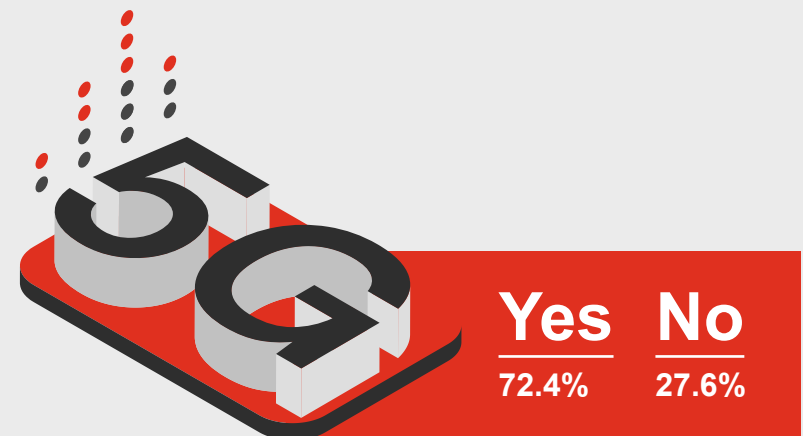
● Yes ● No



Are you familiar with 5G by gender?



Are you familiar with 5G?



In consumers' own words

“

Currently 4G speed covers the needs of existing services. Adding more speed with 5G I believe it would be of no value for at least the next 3-4 years

(Male 31-40)

“

We all know that 5G will be the next generation of wireless communication and technological growth, but currently, in Cyprus, we pay the highest price for internet with the lowest speed and value in the EU

(Female 31-40)

“

Faster is not always better - there will come a time when people will not be able to cope with the increased pace

(Male 41-50)

C. 5G Engagement

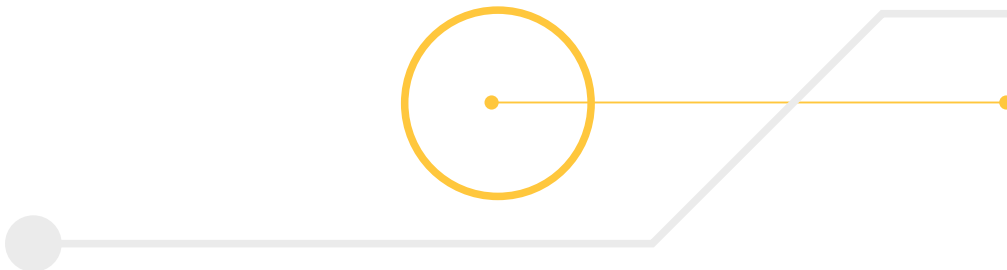


Part C1: 5G Engagement

The million-dollar question

With the development of technology over the years it is often the case that consumers expect “more” for “less”. It is widely accepted that monetization of 5G infrastructure will involve new synergy models and use cases well beyond the Telco connectivity bundle (voice and data). Posing the below question before the development of tangible 5G use cases is to an extent problematic since the “more” may be different in the mind or imagination of each responded.

Nonetheless, it is unlikely to get a more honest consumer reaction towards a “proposition” than to ask :
“what would you pay for it?”



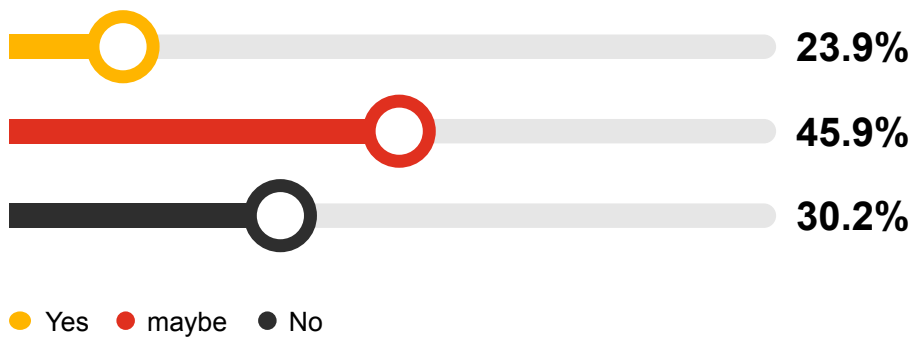
A few are engaged, more are listening...

So here it goes. As things currently stand:

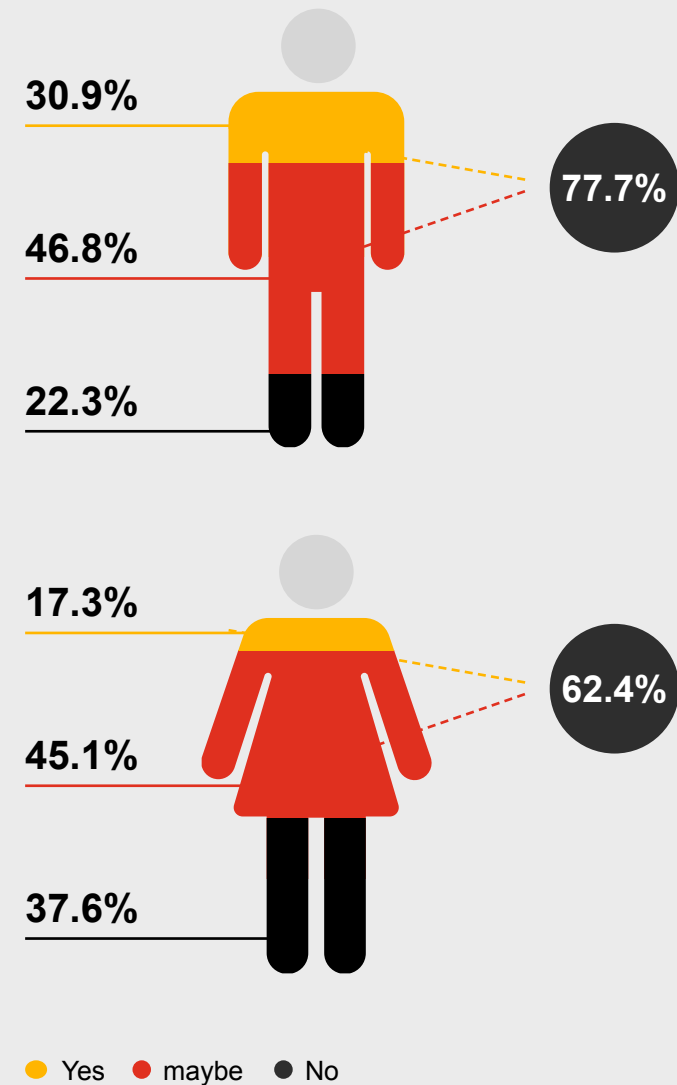
- 24% of the respondents would be willing to pay more for 5G,
- 46% have answered “maybe”, so they are listening, they are interested, and they are waiting to be convinced!
- 30% don't really care at this point in time
- Females are more negative (37.6%) and hesitant (45.1%) to pay more for the new technology.

According to the survey, 5G technology is currently more attractive to male respondents (78%) who are more willing to invest a bigger amount than their current spending. It is important that 95% of respondents who would or may be willing to pay more for 5G, live in urban areas.

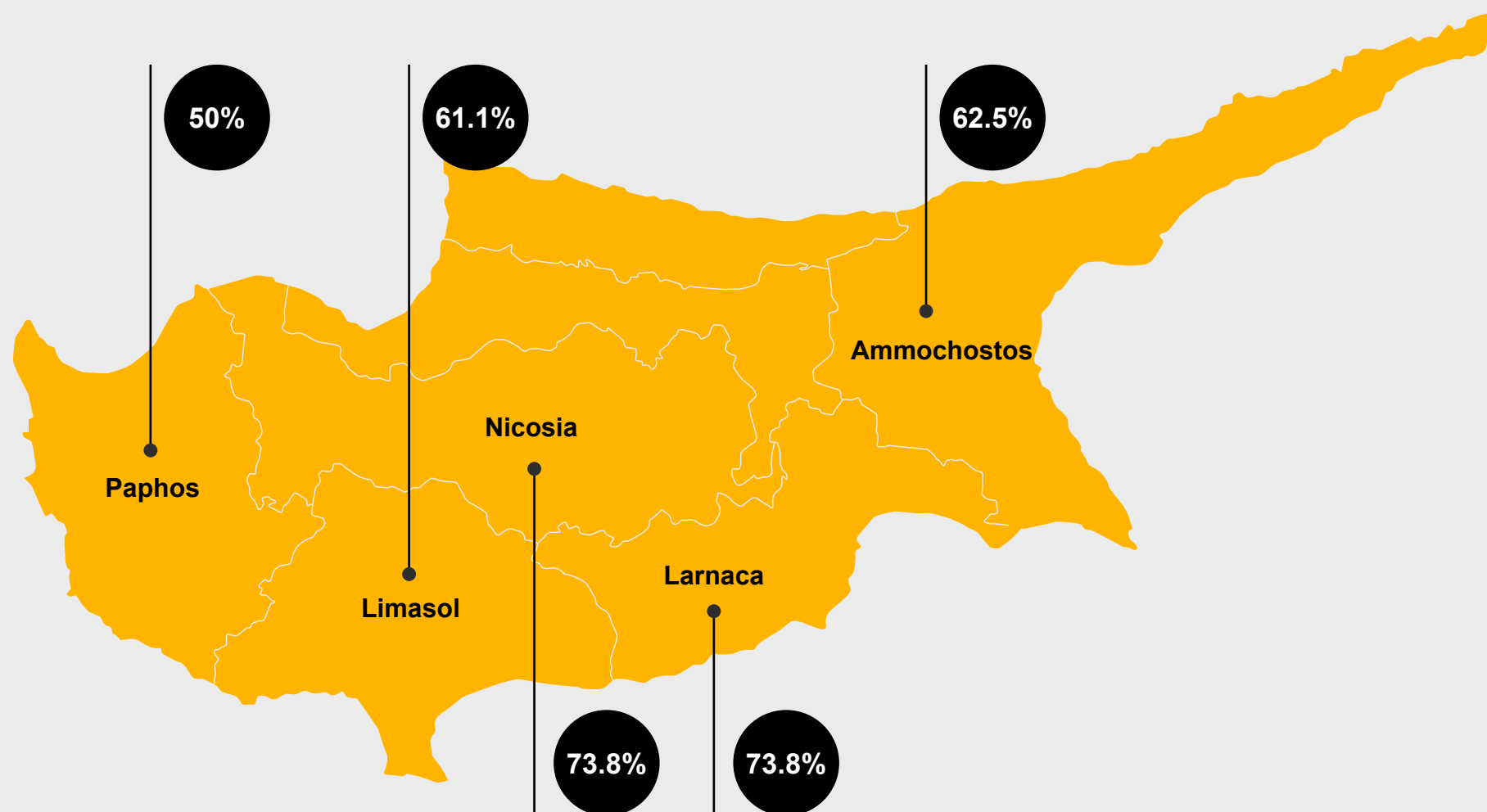
Would you be willing to pay more for 5G than what you are paying for your current connection?



By gender: Would you be willing to pay more for 5G compared to the cost of your current internet connection?



By district: Would you be willing to pay more for 5G compared to the cost of your current internet connection?



● Positive and positive under conditions responses

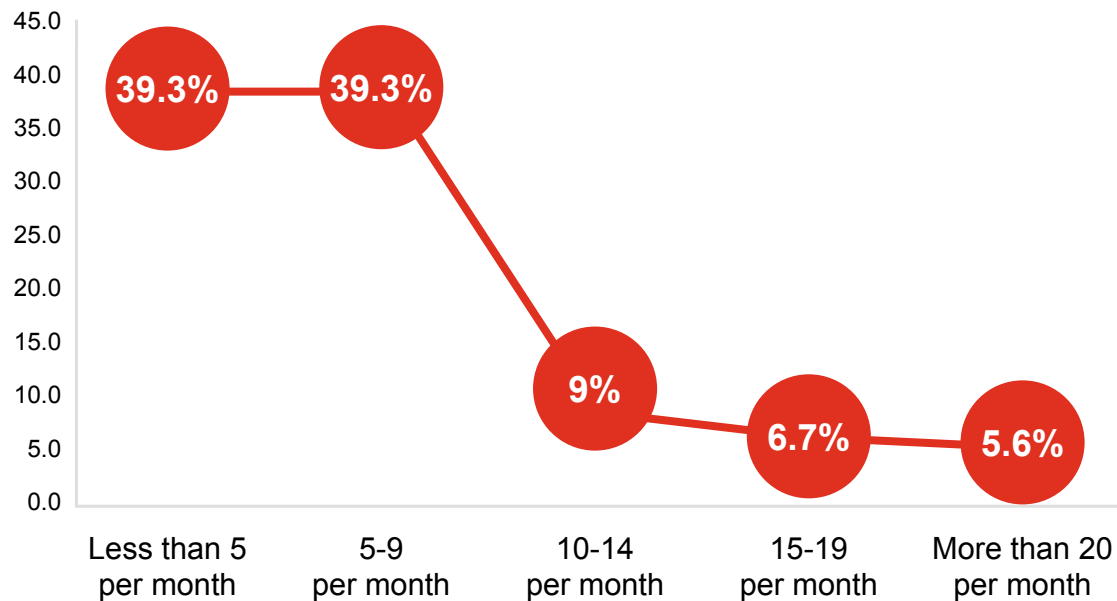
How deep are the pockets for 5G?

In accordance with the responses of the survey there is a clear threshold over which most consumers lose interest! Only 20% would be willing to pay more than 10 euros.

Under 10 euros results are interesting with consumers being split 50/50 between those willing to spend up to 5 euros and those willing to pay up to 10 euros. This finding may create interesting possibilities for product development and customer segmentation by the service providers.

Females with 41% are more reluctant to pay more than 5 euros, as opposed to males who are more generous.

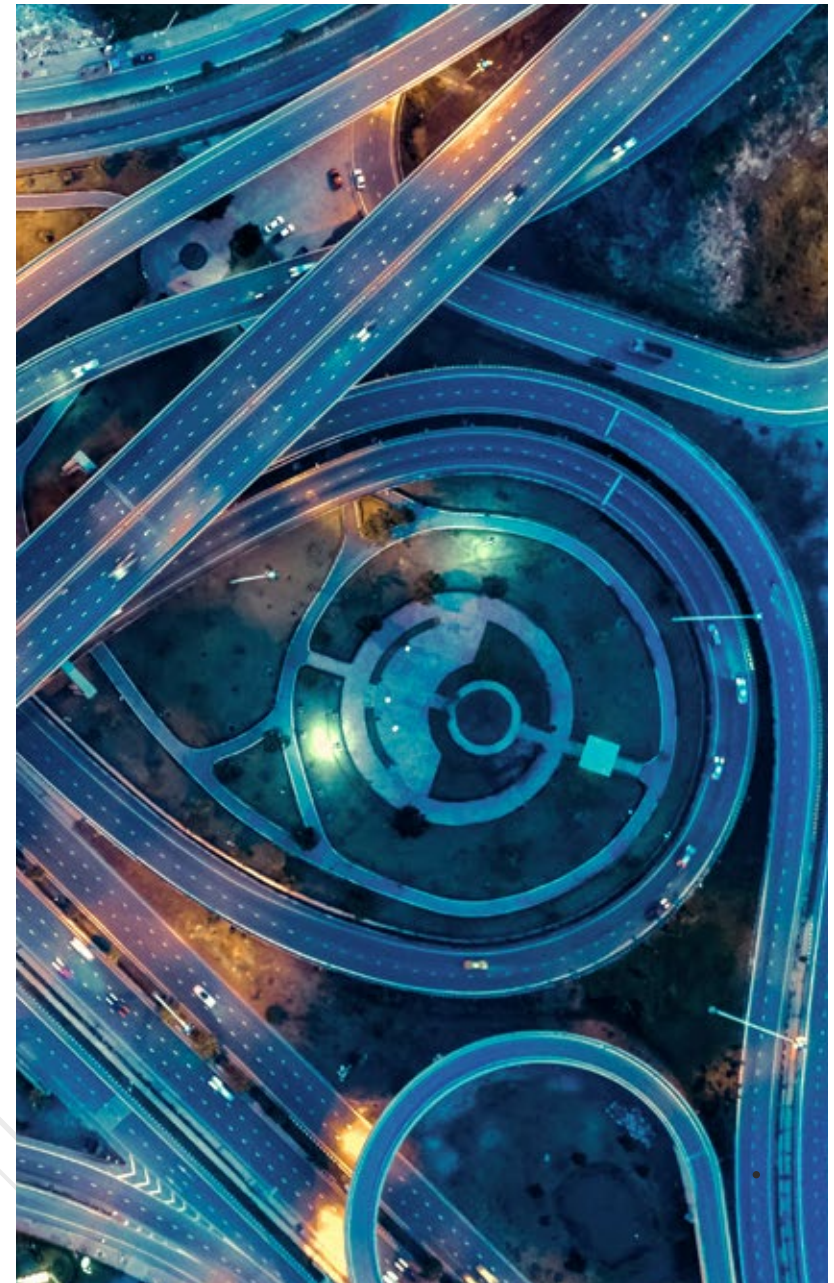
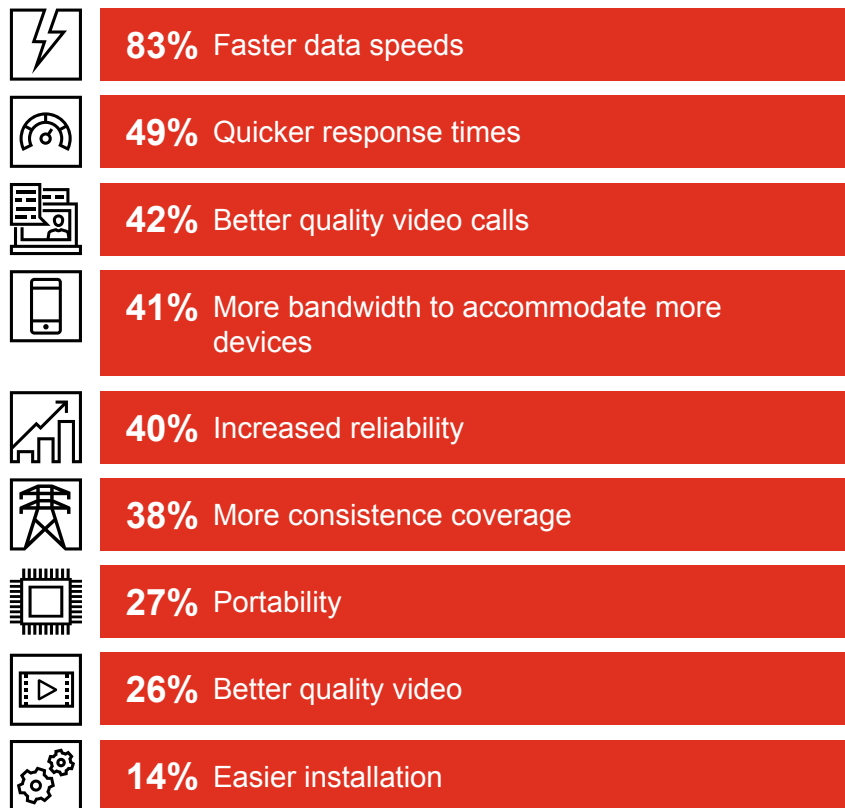
How much more would you be willing to pay for 5G?



Part C2: 5G, but why?

83% of the respondents considered the “Faster Data Speeds” as the most important factor/benefit that would contribute to their willingness to pay more for 5G. This will have a positive impact on their day-to-day personal and business transactions. Faster internet would improve security, save money, enable quicker cloud access, improve productivity, decrease stress, etc. Quicker response time (49%) and Increased reliability (40%) were also selected as important benefits.

Benefits that contributed to your willingness to pay more for 5G.



Part C3: How far would you go to get 5G?

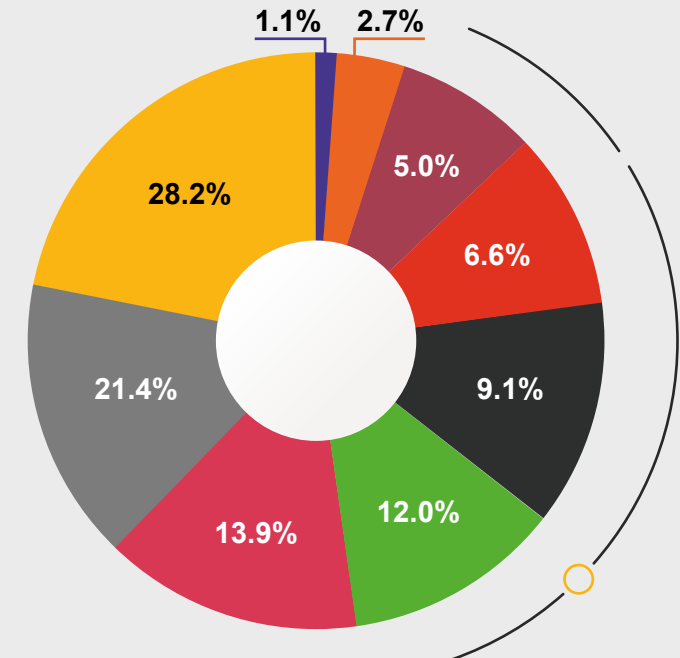
Would you switch Telco provider for 5G?

Well...almost $\frac{3}{4}$ would!

If 5G delivers on its promise, 72% of the respondents would be willing to change provider, albeit for some under conditions, if their current internet provider does not offer 5G. From the positive conditional answers (depends) the price is the most important factor followed by the administration burden and speed at offer.

With 35.7% negative answers of female respondents are more skeptical in their decision to make a change for 5G if their current provider does not offer this new service. Like males, they considered price, administration burden and speed as the top factors that would contribute to their decision.

Assuming that 5G networks become available, would you be willing to make a change for 5G if your current provider does not offer 5G?



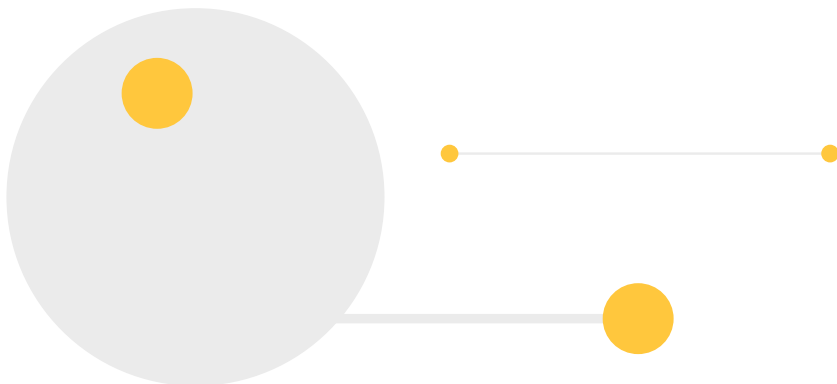
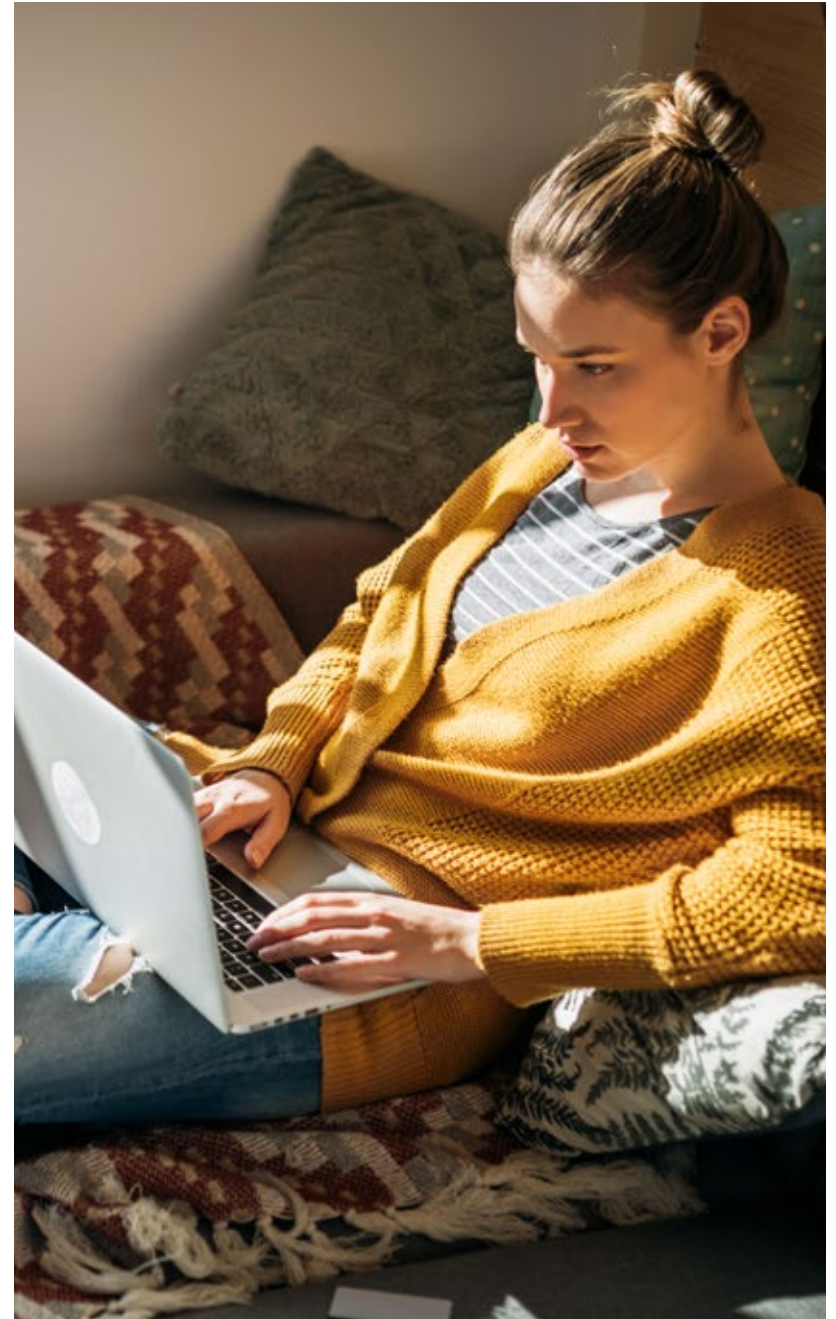
- It depends on speed
- It depends on administrative burden
- It depends
- It depends on administrative burden & price
- It depends on speed & price
- Yes
- It depends on administrative burden & speed & price
- It depends on price
- No

An aside. Portability is working!

15 years on and portability is working

Given the mixed reactions of respondents towards 5G, and the high levels of satisfaction with current Telco services the responses to the previous question is strong evidence of good portability.

15 years after the liberalization of the Telco market and Cypriots seem to be confident that they can enjoy good services from more than one provider and the network change process does not seem to scare them!



In consumers' own words

“

I am very sceptical as to the health risks, since this is going to be the largest scale health experiment probably ever done.

(Male 21-30)

“

5G should be treated with extreme caution and possibly at a slower pace.

(Female 21-30)

“

Health is number one concern.

(Αντράς 41-50)

D. 5G Deployment challenges



It's far from "Job finished"

The public debate holds strong; media, social media, public fora are all flooded with data, views and opinions regarding the risks and benefits from the development of the 5G networks.

It is obvious that there are multiple concerns and objections primarily around the protection of public health and the environment. The survey results mirror the situation.

If 5G networks were to be deployed in the next 12 months, would any of the below be of concern to you?



Potential health risks



Disruption to urban landscape



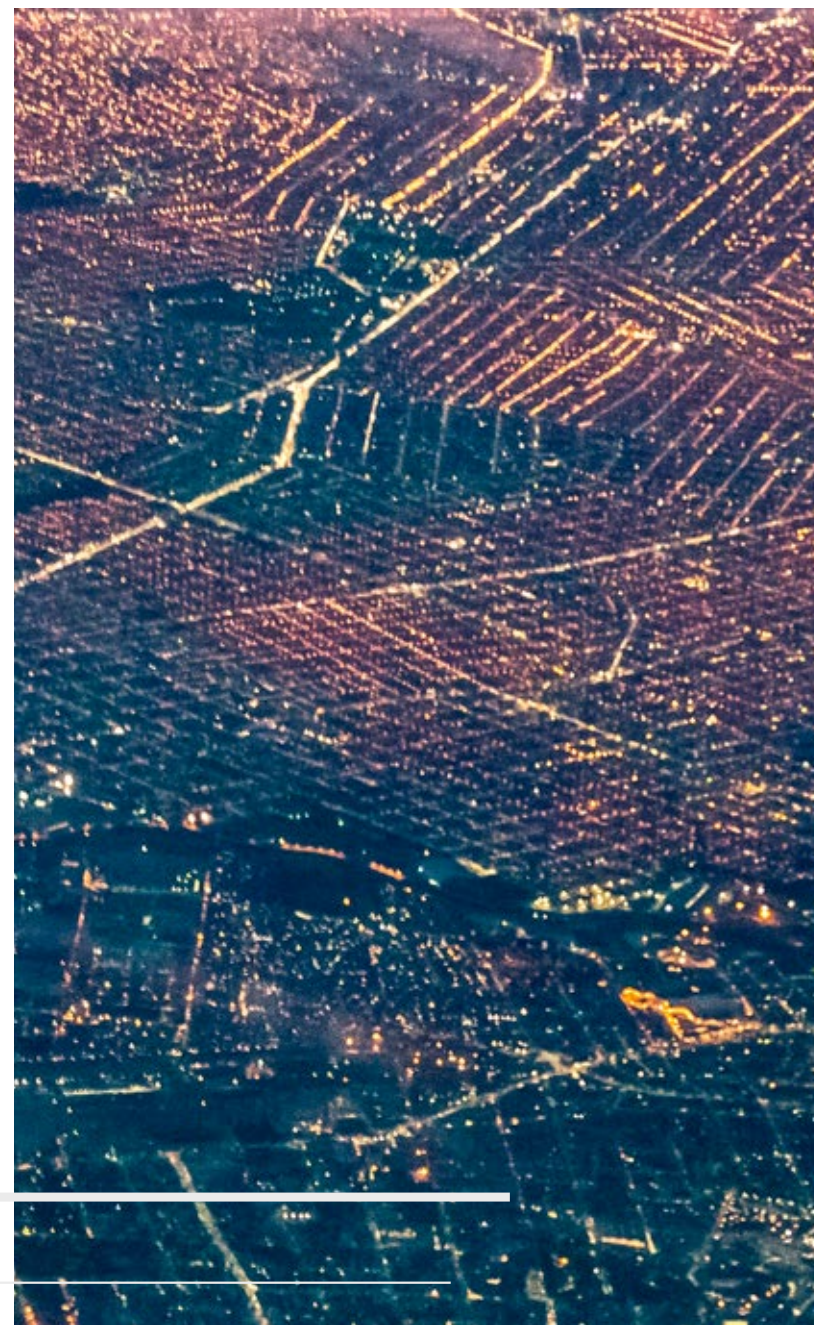
Lack of sufficient 5G compatible devices



Possible failure of 5G to deliver on promised upgraded capabilities



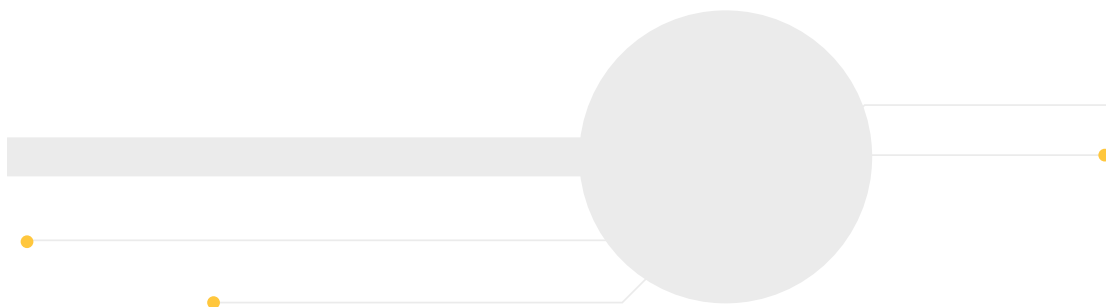
None of the above



An investment for social, cultural and financial prosperity

Numerous studies have demonstrated the wide-reaching benefits of investments in networks which are not just financial, but also social, educational and cultural. The state, academia, institutions and the business community have a duty to finance, conduct and communicate credible, unbiased research which will confirm the framework under which 5G networks will be deployed operated and regulated.

Similarly, Telcos need to show respect, act and communicate with transparency and integrity in order to foster the trust of the Society.



Cyprus as a center of entrepreneurship and innovation!

Timely, comprehensive and commercially successful 5G network development is a local bet, closely connected with the ambitions and expectations for the development of a dynamic entrepreneurship and innovation ecosystem. Start-ups, academic research and excellence are key pillars of entrepreneurship and innovation and are highly dependent on the access to world class infrastructure and connectivity services.



Conclusions

5G promises speed, security, money savings and an enhanced experienced. However, there are challenges that should be addressed, such as the concerns about its impact on health and the environment.

Telecommunication providers need to educate consumers about 5G. What it is, and what it enables beyond the obvious. It is undeniable that in this process there will be some difficulties for the providers. The pressure for lower costs on mobile broadband, as the number of options will increase, while at the same time there is a need to create a more personal and unique customer experience are some of these difficulties. In addition, 5G investment should pay off, which is an additional challenge for providers. However, despite the challenges, the future is near and we need to find the answers to unlock it.

The benefits that 5G is expected to unlock for society over the next decade are truly revolutionary. In addition to the faster and upgraded speeds for consumers, 5G infrastructure will enable smart technologies which will push forward our quality of life. 5G will enable the extensive development of technologies based on Internet connectivity, from connected motor vehicles to smart cables, lights, healthcare monitoring devices as well as many use cases that are impossible for the human mind to comprehend at this time.

The Internet of Things is coming and 5G is the technology that will make it a reality.

Biography



George Ioannou

As an Assurance and IFRS specialist, George has been working with the Telecommunication industry since mobile phones had buttons and Data was not a source of revenue. He has written numerous articles and has presented in public fora and conferences on industry topics such as the economics of 5G and the practical implications of accounting developments. He is an economist by study and an accountant by profession so he is always keen to understand the economic forces behind a new business proposition.

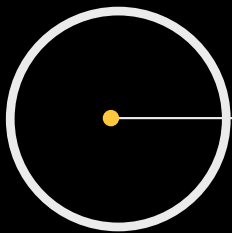
When he is not discussing financials with his clients, he is enjoying the gift of technology, in a football match of a home video game console, with Ioannis and Christina (his two kids) or in obsessively monitoring the evolution of his homebrews!

Biography



Dr. Petros Lois

Dr. Petros Lois is a Professor at the School of Business, University of Nicosia, (Cyprus, EU). He holds MSc and PhD degrees and he also holds the professional title of Certified Management Accountant (CMA). Prof. Lois is currently the Head of the Department of Accounting at the University of Nicosia, the Director of the Master's degree in Banking, Accounting and Finance (Joint degree with the Hellenic Open University), and holds the Chair of PwC in Business Research at the University of Nicosia. Prof. Lois is also a member of various professional bodies and served as a member of the Board of Directors at the Cyprus Port Authority. He is Co-Founder of the "Euromed Journal of Business" (Emerald Publications). His research work has been published in international conference proceedings, books and academic journals.



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