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Enhancing Smartphones Adoption in Mexico: Incentives for an Essential Activity

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Research Coordinator

Samuel Bautista Mora
General Coordinator
The Social Intelligence Unit

Research

Marissa Manzanilla López
Senior Analyst
The Competitive Intelligence Unit

Paulina Alejandra Castañeda Hernández
Analyst
The Social Intelligence Unit

Collaboration

Ernesto Piedras Feria
CEO & Director General, The Competitive Intelligence Unit &
Professor, Department of Economics,
Instituto Tecnológico Autónomo de México (ITAM)

Gonzalo Rojon González
Director & Senior Partner
The Competitive Intelligence Unit

Academic Review

Enrique Melrose Aguilar
Professor, Academic Department of Engineering and Digital Systems
Instituto Tecnológico Autónomo de México (ITAM)

Federico José Kuhlmann Rodríguez
Professor, Academic Department of Engineering and Digital Systems
Instituto Tecnológico Autónomo de México (ITAM)

ABSTRACT

The study recognizes, in first place, that the ICT-related essential activity declarations in the context of the healthcare crisis are consistent with the Constitutional mandate establishing the fundamental right (ICT) access, compelling the Mexican State to provide conditions for universal access.

However, 7.7% of the total population do not own a smartphone, particularly affecting ICT access of people in lower socioeconomic levels.

This inequality is partly a consequence of low income in households preventing them from owning smartphones. On average, according to a sample within the National Survey of Household Income and Expenditure (Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH 2020), households invest 7.2% of their income on handsets. When analyzed by income decile, the mobile cellphone expenditure proportion of households in the poorest decile is 3 times bigger than households of the richest decile.

Also, 31% of people prefer to acquire their smartphone at a purchase spot that offers deferred payment schemes. In fact, buyers that acquire smartphones through a deferred payment scheme tend to invest more in higher-end devices than those paying in cash. This suggests that financing handsets can impact positively in the ownership of smartphones with better connectivity and better processing capacities.

Considering that low income and a lack of deferred payment schemes prevent a universal adoption of smartphones, the study proposes that the Mexican government play a more active role through the following mechanisms:

1. Tax policy that reduces the final price to consumers.
2. Subsidies form government to promote adoption in targeted social groups.
3. Low cost public loans to promote adoption and the government as joint guarantor for private loans.
4. An ICT affordability policy

OUTLINE

1. INTRODUCTION

The main objective of this study is to show the size of the smartphone adoption gap in Mexico and to propose strategies to reduce it, all in the context of access to ICT (Information and Communications Technologies) as a fundamental right and due to the fact that ICT sectors are essential for the Mexican economy during the health crisis of COVID-19.

The pandemic crisis exposed the importance of the ICT not only in terms of access as a fundamental right or the play they role for providing health, education, banking and other services, but it also revealed how essential are activities that ensure the production and purchase of devices and digital services.

In this order of ideas, as explained in the second part of the document, the Mexican government declared as essential all activities involving the continuity in the provision of telecommunications services at the beginning of the pandemic, nevertheless, four months later, it was declared as essential activities all those involving manufacture and purchase of electronic devices.

In the third part of this document, we introduce statistics regarding the ownership of smartphones and the adoption gaps of these devices, as well as some of the reasons that prevent universal adoption. In the fourth part, after shedding light on these reasons, mechanisms to solve the gap in the adoption of smartphones are explored, while providing details regarding some cases for the Latin American region that could be of particular interest. Finally, the conclusions section provides a comprehensive synthesis of the document while mentioning some of the available institutional tools in Mexico to implement mechanisms established in the previous section.

2. ENSURING CONNECTIVITY: ESSENTIAL ACTIVITIES AND THE CONSTITUTIONAL MANDATE

Staying connected has been crucial during the COVID-19 pandemic, since it allows communication between individuals and facilitates the provision of education, healthcare, and other public services.

For this reason, in April 2020, the Mexican government declared all activities involving the continuity in the provision of telecommunications services to be essential.[1] Even though the digital divides is considerable in Mexico, this decision was crucial to provide continuity to some activities through remote work, as to avoid delays in the school year as well.

Even though the provision of telecommunications services was ensured during the crisis, there was still a missing component. Households and companies required terminal equipment (handsets, tablets, and other devices able to process data, text, and information) for connectivity to be effective. In this sense, to purchase electronic devices was essential to handle the health crisis.

It was four months later (August 2020) when the Mexican government declared activities involving manufacture and purchase of electronic devices to be essential.[2]

This inconsistency could be a reason for various business and households to be underequipped during the pandemic. According to the National Institute of Statistic and Geography (INEGI by its acronym in Spanish) between May and June of 2020, only 33% of companies implemented home office, and 30% implemented internet sales.[3]

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[1] Diario Oficial de la Federación. "Acuerdo por el que se precisan las actividades esenciales competencia de la Secretaría de Comunicaciones y Transportes, en el marco de atención de la emergencia sanitaria generada por el virus SARS-CoV2". Disponible en: http://www.dof.gob.mx/nota_detalle.php?codigo=5591372&fecha=08/04/2020

[2] Diario Oficial de la Federación. "Acuerdo por el que se establecen como actividades esenciales las que se indican". Disponible en: https://dof.gob.mx/nota_detalle.php?codigo=5597707&fecha=03/08/2020

[3] INEGI. "El INEGI presenta resultados del impacto del COVID-19 en la actividad económica y el mercado laboral" p.12. Disponible en: https://www.inegi.org.mx/contenidos/saladeprensa/boletines/2020/OtrTemEcon/COVID-ActEco.pd

It is remarkable that 95% of the big companies implemented home office while this was only possible for 29% of the micro-companies suggesting that the smaller the company the bigger the challenges to implement such mechanism.[4]

It was also reported that in April 2020, nearly a quarter of the labor force over 18 years old was working from home[5] increasing the internet capacity and equipment requirements for households and organizations.

The two essential activity declarations are consistent with the Constitutional mandate establishing the fundamental right to Information and Communication Technologies (ICT) access, compelling the Mexican State to provide conditions for universal ICT access.

[4] Id.

[5] Ibid, p. 27.

3. SMARTPHONES ADOPTION

I. *HANDSETS ADOPTION DIVIDE*

As mentioned above, the proliferation of handsets is crucial for guaranteeing connectivity access, particularly in the case of smartphones since they allow enhanced connectivity and better computing capacities. The ownership of these devices has been consistently increasing year over year in Mexico, however there is an adoption divide that accounts for 7.7% of the total population.[6]

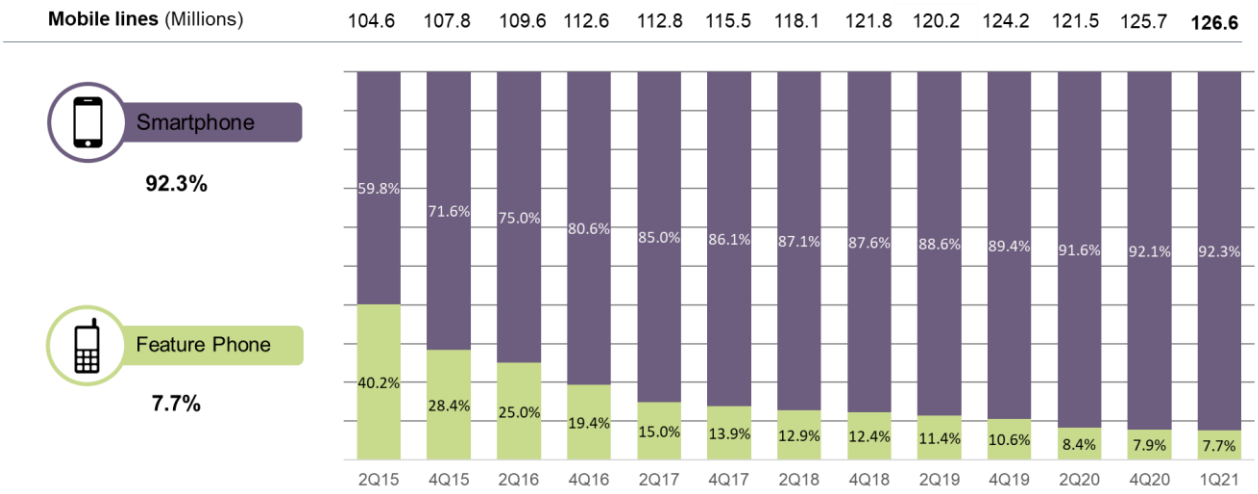
Smartphones represented 92.6% of the total mobile lines during 1T21

This adoption scenario suggests the existence of a population group that requires access to handsets, particularly during a long-lasting COVID-19 health crisis which has paralyzed the economic activity and isolated individuals.

In the first quarter of 2021, telephone lines in Mexico accounted for 126.6 million, i.e., a penetration of 100%, where 92.3% of them correspond to a smartphone as shown in the following figure.

[6] The Competitive Intelligence Unit. "Smartphones market sizing 1Q2021", 2021.

Evolution of the number of smartphones, feature phones, and mobile lines in Mexico



Source: *The Competitive Intelligence Unit, 2021*

Regarding adoption among socioeconomic groups, significant differences were found. Smartphone owners in the top socioeconomic group (A/B[7]) accounted for a 100% penetration, while there were 96.6% in the mid-top (C+[8]) group. People within the upper and middles socioeconomic groups (A/B and C+ socioeconomic groups) are all beneficiaries of smartphones features.

The mid-low level (C/C-[9]) registered a 96.2% smartphone penetration. On the other hand, the low level (D/E[10]) segment, reached a 91.4% penetration

Although, the level of adoption is considerable in all groups, there is still an ownership divide (percentage of people not owning a smartphone) that needs to be addressed in the middle and low socioeconomic groups.

[7] This group includes households where the family head has professional studies, and they have internet access. Their primary investment is in education services and they use a smaller fraction of their spending in food compared to other levels.

[8] C+ group households tend to have one or more transportation vehicles; they also have fixed internet access and one third of their spending is in food.

[9] C and C- groups tend to spend more on food compared to other services and products including education. 73% of these households in C level have fixed internet access, this indicator is 47% in C- level.

[10] These groups show the lowest adoption of fixed Internet and they spend important amounts on food. The family heads tend to have low schooling levels, and their education investment represents the smallest fraction in their spending scheme.

At this point, it is important to recognize that even when declaring ICT related activities as essential and embrace the ICT access as a fundamental right are critical actions, handsets adoption gap requires additional specific measures.

Before proposing such measures, some aspects preventing households and individuals to acquire handsets will be explored.

Smartphones in education

A potential use proposed by Enrique Melrose*

A considerable advantage of high-end smartphones is their capacity and speed of processing wireless audio and video signals, now with greater efficiency than many modems for fixed services. Considering that 86% of the Mexican population own a smartphone, these devices could become "virtual modems" for homes with students and instead of making students receive their courses on a cell phone screen (uncomfortable due to its size and its small keyboard by software) could connect smartphones to any smart-screen TV (64% of households own a Digital TV) and to a keyboard (which could be second-hand) and convert their handset in a true and practical "classroom".

Therefore, it is necessary to facilitate the acquisition of high-end smartphones, and to promote the creation of that dedicate themselves to design, build and sell these interfaces.

II. *INCOME INEQUALITY DISCOURAGING ADOPTION*

Mexico's income inequality has been broadly discussed. The International Monetary Fund (IMF) points out that the inequality levels in this country are comparable to those in other countries of the region, but considerably higher when compared to other emerging and developed economies.[11]

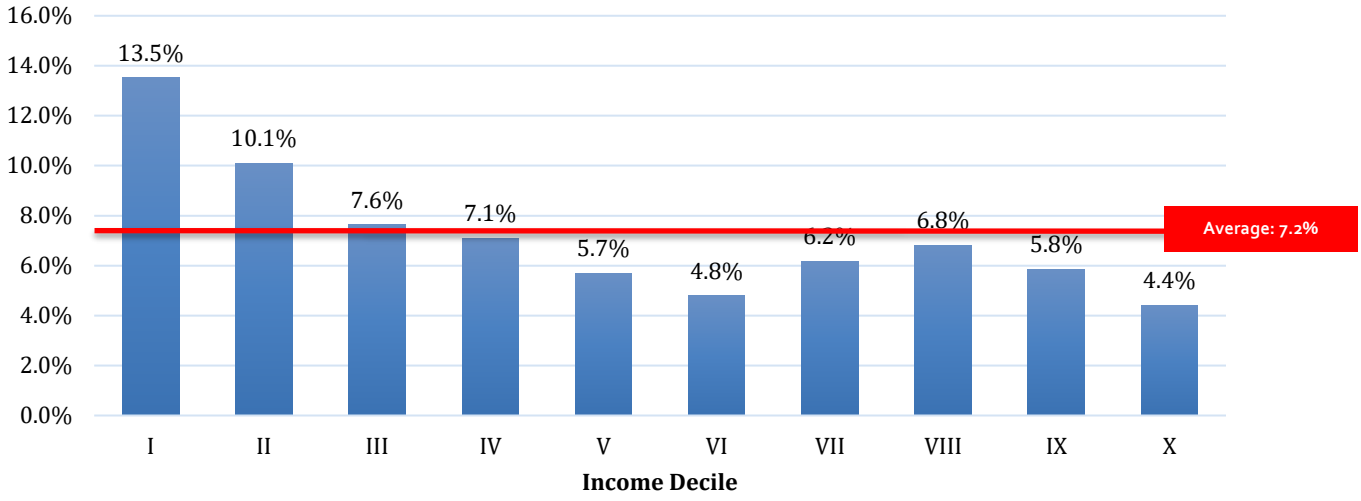
This situation is consistent with the handset adoption in the country. On average, according to a sample within the National Survey of Household Income and Expenditure[12] (Encuesta Nacional de Ingresos y Gastos de los Hogares or ENIGH) 2020, households invest 7.2% of their income on handsets as shown in the figure below.

[11] Lambert F. and Park H. "Income Inequality and Government Transfers in Mexico". International Monetary Fund, 2019.

[12] INEGI. "Encuesta Nacional de Ingresos y Gastos de los Hogares 2020". Available at: https://www.inegi.org.mx/programas/enigh/nc/2020/

When analyzed by income decile, households invest 7.2% of their income on handsets. When analyzed by income decile, the mobile cellphone expenditure proportion of households in the poorest decile is 3 times bigger than households of the richest decile.

Households' expenditure on handsets as a proportion of the total income



Source: The Competitive Intelligence Unit with information from ENIGH, 2020

Besides, the National Survey on Availability and Use of Information Technologies in Households[13] (Encuesta Nacional sobre Disponibilidad y Uso de Tecnologías de la Información en los Hogares or ENDUTIH) 2020 shows that 40 out 100 people not owning a mobile phone said they don't have a handset due to the lack of economic resources.

According to ENIGH, Households invest 7.2% of their income on handsets. Households in the richest decile invest almost 5 times on handsets compared to households in lowest decile

The data suggests that low income represents an important barrier for households to own a handset. In this matter, and to be consistent with the fundamental right to ICT access and that manufacture and purchase of electronic devices are essential activities, households should be able to have easily access to smartphones so they can be connected and seize all the benefits from digital access.

Some measures like providing subsidies, affordable finance to acquire smartphones and a tax policy avoiding price burdens can be effective to reach households facing the income barrier.

III. *OTHER ASPECTS AFFECTING ADOPTION*

Additional to the income aspect, according to ENDUTIH 2020, other factors affects the adoption of handsets. Particularly, 16% of the individuals without a handset said they don't need one. Although this parameter is of relevant size, according to ENDUTIH 2019 was 29%.

The Competitive Intelligence Unit (The CIU) confirmed this tendency was reversed during the initial stages of the health crisis. 60% percent of the surveyed people during the second quarter of 2020 uphold they acquire Smartphones from convenience stores to face COVID-19 pandemic, while 15% confirmed they did it because of offers and discounts.[14]

On the other hand, as stated by The CIU, 31% of people prefer to acquire their smartphone at at retail stores where they can find financing options. In fact, buyers that acquire smartphones through a deferred payment scheme tend to invest more in higher-end devices than those paying

[13] INEGI. "Encuesta Nacional sobre Disponibilidad y Uso de Tecnologías de la Información en los Hogares or ENGIH 2020". Available at: https://www.inegi.org.mx/programas/dutih/2020/

[14] The Competitive Intelligence Unit. *Op.cit.*

in cash[15]. This suggests that financing handsets can impact positively in the ownership of smartphones with better connectivity and better processing capabilities.[16]

Once some of the aspects impacting smartphones adoption have been discussed, it becomes relevant to suggest some strategies to close the ownership divide.

[15] *Id.*

[16] *Id.*

4. PROMOTING THE SMARTPHONES ADOPTION

Considering that income inequalities and the lack of access to financing sources are among relevant reasons preventing universal adoption of smartphones, it is possible to identify three mechanisms[17] to enhance handsets ownership:

1) **Tax policy** that reduces the final price to consumers.
2) **Subsidies** from government to promote adoption in targeted social groups.
3) **Low cost public loans** to promote adoption, or the **government as joint guarantor** for private loans.

These mechanisms can be implemented separately or in a complementary way, and they represent a first approach to leverage smartphones adoption through concrete measures promoted by the government.

Three proposed mechanisms to enhance smartphones adoption:

1. Comprehensive tax policy
2. Subsidies
3. Government loans

I. *TAX POLICY: AFFORDABLE SMARTPHONES*

A comprehensive tax policy must consider how essential handsets are for the economy and how important they are in guaranteeing the fundamental right of access to ICT. By removing or reducing the tax burden, the government will make handsets more affordable to final consumers.

The Value Added Tax (VAT) Act in Mexico considers a 16% rate for goods acquisition, the provision of services, the temporary grant use or enjoyment of goods, and the importation of goods and services. On the other hand, the Special Tax on Production and Services (Impuesto Especial a la Producción y Servicios or IEPS) Act considers a 3% tax for services provided through telecommunications networks in Mexican territory. A VAT elimination (or reduction) policy ensures a lower final price for handsets, and it could be established by determining smartphones

[17] GSMA. "Accelerating affordable smartphone ownership in emerging markets". P.57. Available at: https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2018/08/Accelerating-affordable-smartphone-ownership-in-emerging-markets-2017_we.pdf

as exempt from tax payment goods or subject to 0% rate. Together with this measure an elimination of the 3% IEPS tax on education oriented services provided through telecommunications networks, will make possible to target benefits for students, educators and small and education oriented medium sized enterprises (SMEs), particularly students from public schools or receiving government stipends such as Becas para el Bienestar Benito Juarez attending students at basic, medium, and professional education levels.

The implementation of a VAT elimination (or reduction) not only will facilitate the acquisition of devices in general, but it also provides beneficiaries with more income capacity to acquire high-end devices with more advanced features such as longer battery life and longer life cycle, and, therefore, allow access to better quality equipment that allow a better appropriation of ICT benefits.

Tax exemption strategies have been implemented in other countries around the world and provide reference points for the results likely to be achieved by this policy.

In 2019, the Foreign Trade Committee (COMEX) of Ecuador established the elimination of tariffs for computers, tablets, and smartphones[18]. The Ministry of Telecommunications and Information Society (MINTEL) requested that companies and venues that sell these products should update their prices to reflect such resolutions, for the benefit of people and reducing the digital divide.[19]

One of the main changes of the Tax Reform in Colombia (adopted since January, 2017), was the elimination of payment of the VAT for smartphones (and tablets) whose value does not exceed 22 Units of Tax Value (around to US $250 dollars).[20] It is important to remark that the low threshold of the devices' value distorts the relative price of low-end devices compared to high-

[18] *V.* Resolutions No. 025-2019 and No. 024-2019 of the COMEX

[19] Ministerio de Telecomunicaciones y de la Sociedad de la Información. "Equipos tecnológicos ya ingresan al Ecuador con cero aranceles". Available: https://www.telecomunicaciones.gob.ec/equipos-tecnologicos-ya-ingresan-al-ecuador-con-cero-aranceles/

[20] Larocca, N. "Colombia: quita de IVA a smartphones económicos impulsó migración a gama media". Telesemana. Available at: https://www.telesemana.com/blog/2020/01/23/colombia-quita-de-iva-a-smartphones-economicos-impulso-migracion-a-gama-media/

end devices, preventing people to have incentives to migrate to high-end options that allow better connectivity conditions.

Ghana eliminated in 2015 custom duties on smartphones that accounted for 20% of the total price. The impact of this measure was estimated in 3 million more smartphones between 2015 and 2020 and tax revenues equivalent to $37 million dollars[21]. In Kenya (2019) they eliminated VAT from mobile handsets which resulted in a 20%increase in the penetration rate.[22]

Other tax elements indirectly impacting the ICT adoption in Mexico:

1. High spectrum annual fees indirectly hindering the deployment of 4G and 5G telecommunications networks and distorting prices to final consumers
2. 3% special tax on services provided through telecommunications networks

II. *SUBSIDIES*

This mechanism allows governments to subsidize smartphones to targeted social groups with the help of handsets distributors or carriers.[23]

The COVID-19 crisis has brought into sharp focus that students and teachers are a reasonable social group that requires subsidies to acquire smartphones. The education sector has been affected profoundly, suffering remarkable alterations to the learning-teaching process. Face-to-face traditional classes have been substituted with videoconferences, and additional activities are executed through digital platforms making connectivity and handsets (for teachers and students) crucial tools in such scenario.

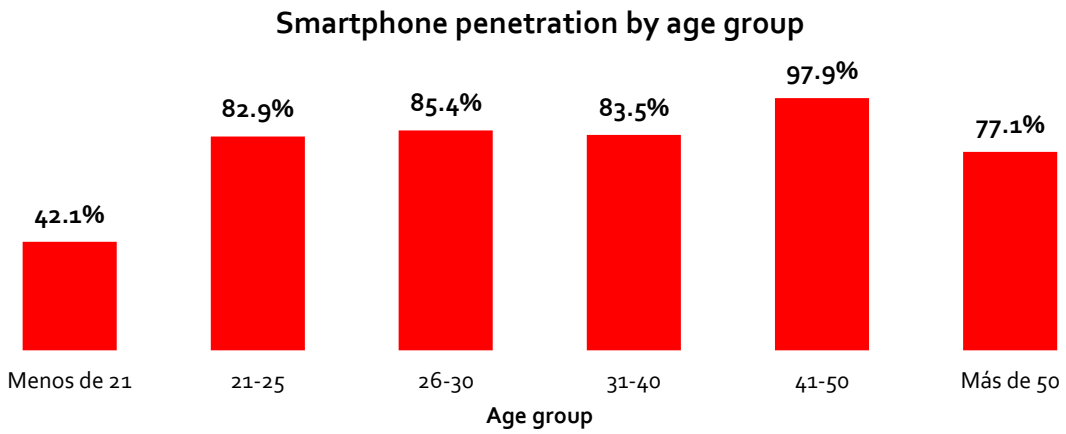
It is also remarkable that the age group with the largest smartphones' requirement is precisely the school-age people as shown in the following figure. Only 42% of people under 21 years old have a smartphone in Mexico[24], showing that the youngest generation is the less ICT equipped reducing their learning opportunities.

[21] Deloitte/GSMA. "Digital inclusion and mobile sector taxation in Ghana". 2015

[22] GSMA. "Mobile Telephony and taxation in Kenya". 2011

[23] GSMA. *Op.cit.*

[24] The Competitive Intelligence Unit. "Smartphones market sizing 2Q2020", 2020.



Source: *The Competitive Intelligence Unit, 2020*

As an example of the subsidization mechanism, the National University of San Agustín, a Peruvian public university, proposed that no student should stop attending virtual classes due to the lack of equipment in the face of the COVID-19 health crisis, delivering 3,641 mobile phones with unlimited internet to students of low socioeconomic status, so they can continue their education.[25]

On the other hand, on 2016, The ICT Ministry (Ministerio de Tecnologías de la Información y Comunicaciones or MinTIC) in Colombia announced the Social Mobile Internet for People Project, an initiative that will provide marginalized citizens a 3 to 4 gigabyte mobile Internet connection at low price during 18 months and a subsidized 4G smartphone..[26]

The National Government of Argentina created the Cellular Exchange Plan (Plan Canje), and the Tablets Exchange Plan among others. This program allows Argentinian people to take their own old products as payment and exchange them for more modern devices. The products delivered by the citizens as part of the payment must be in good conditions.[27]

[25] Zárate P. "UNSA entrega más de 3 mil celulares con internet a alumnos vulnerables". EL Búho, 2020. Available at: https://elbuho.pe/2020/06/buenas-noticias-unsa-entrega-mas-de-3-mil-celulares-con-internet-ilimitado-para-alumnos-vulnerables//

[26] MinTIC. "Internet móvil para los colombianos más necesitados". Available at: https://www.mintic.gov.co/portal/inicio/Sala-de-Prensa/Noticias/16860:Internet-movil-para-los-colombianos-mas-necesitados

[27] Plan Canje 2020."Plan Canje". Available at: http://www.plancanje.org/

The Superintendency of Telecommunications (Superintendencia de Telecomunicaciones or SUTEL) in Costa Rica implemented a program aiming to subsidize connectivity and deliver devices (computers and tablets) together with the Ministry of Public Education (Ministerio de Educación Pública or MEP) to students. This program is looking for connecting 215,000 students and will subsidize internet access to 100,684 households for three years and will acquire 86,812 computers and tablets.[28]

In the case of Mexico, these subsidies can be channeled through the scholarship program known as Becas para el Bienestar Benito Juarez attending people at basic, medium, and professional education levels.

III. *GOVERNMENT LOANS*

This mechanism recognized that financing handsets can impact positively in the ownership of smartphones with better connectivity and better processing capacities, however not all population is able to access to financial services. In this order of ideas, the government can promote smartphones ownership by acting a as a loaner and providing cheap credits or as a joint guarantor for private loans aimed at acquiring smartphones.

It is important to consider that subsidized devices or smartphones acquired with low cost government loans, are prone to be purchased in a second-hand market through pawnshops. This arbitrage creates a secondary market that may deviate the purpose of any ICT-centered policy, therefore a mechanism to provide control over the ownership of a device is required, in particular, it is possible to disable high-end devices once the change in ownership is reported.

The government of Argentina implemented the program "AHORA 12 cuotas" that put 4G smartphones on sale and the total price can be paid in 12 installments without interest rate. This agreement was proposed by the government of Argentina, telephone manufacturers, carriers, and banks,[29] nevertheless the dependency of the smartphones local manufacturing on imported

[28] SUTEL. "SUTEL ampliará proyectos para atender estudiantes sin computadora o Internet". Available at: https://www.sutel.go.cr/noticias/comunicados-de-prensa/sutel-ampliara-proyectos-para-atender-estudiantes-sin-computadora-o

[29] *Id.*

electronic components combined with the high depreciation of the Argentinian currency, led the government to leave cellular phones out the program, and it is estimated a 20% fall in sales of these devices.

In Mexico, there are institutions that can provide cheap credits to acquire smartphones such as Banco del Bienestar or Fund for the Promotion and Guarantee for the Consumption of Workers (Fondo de Fomento y Garantía para el Consumo de los Trabajadores or FONACOT). This financing efforts can be focused on creating a migration effect where low-end devices owners can access to high-end devices, allowing better connectivity features for users.

5. Conclusions

Recognizing the essentiality of activities like the purchase of smartphones and their components during the health crisis is consistent with the idea that ICT are relevant tools during the application of social distancing measures. It is also consistent with guaranteeing the fundamental right of access to ICT.

However, as shown by data, Mexico still has 7.7% of its population without access to smartphones.

This handset ownership divide can be explained in general terms by the difficulty of the low-income households to invest in smartphones, and by the complexity to access to financial services to acquire such handsets, as well as the reduced options to finance the acquisition of such devices.

Considering this, the government in Mexico has tools to enhance the ownership of quality handsets and should take a more active role to be consistent with the proclamation of essentiality of ICT-related activities and with the right of access to ICT. After exploring the reasons preventing smartphone adoption, three public-oriented mechanisms can help close the smartphone ownership gap are:

1) Tax policy that reduces the final price to consumers. It could be established by determining smartphones as exempt from VAT payment goods or subject to 0% rat, together with eliminating IEPS to education-oriented services provided through telecommunications networks so the policy can be target students, educators, and SMEs. It is important to avoid creating other tax burdens.
2) Subsidies form government to promote adoption in targeted social groups. Subsidies could be channeled through the scholarship program known as Becas para el Bienestar Benito Juarez attending people at basic, medium, and professional education levels.
3) Low cost public loans to promote adoption, or the government as joint guarantor for private loans: there are institutions that can provide lower cost credits to acquire smartphones such as Banco del Bienestar or Fund for the Promotion and Guarantee for the Consumption of Workers (Fondo de Fomento y Garantía para el Consumo de los Trabajadores or FONACOT)

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