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Empirical study on the accessibility of Wi-Fi, Computers and Cell Phones in Cuba.

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July 30, 2017

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Abstract

This paper reviews the accessibility of technology in Havana, Cuba as it begins to open its borders to the modern world. The technology researched includes cell phones, Wi-Fi, computers, and personal computers. As the embargo on Cuba begins to fade, tourists and new businesses are flocking to this once heavily restricted island. The focus of this paper is to explain the availability of modern technology to the citizens of Cuba. Currently, technology is very limited in Cuba because Wi-Fi is an expensive luxury for the average Cuban. Modern computers are also an expensive purchase, which forces Cubans to put together computers from pieces of outdated computers. Government restrictions, limited accessibility, and lack of funding have left Cuba behind the rest of the world in terms of technological advances.

Introduction

The island of Cuba is a country lost in time. While touring the country, limited accessibility of Wi-Fi, computers, and cell phones was a striking in contrast to the accessibility found in the United States. Cuban's do not have the access to, nor income to purchase the latest generation cell phones, computers, and/or Wi-Fi services without government impingements. Cuba lacks the infrastructure, finances, education, and access to technology to modernize itself. Modern equipment is hard to come by, so citizen's piece mill working parts from various computers to create a single working machine. The governments' implementation of harsh security while using the internet affects the way Cubanos are able to obtain and become aware of advancements in modern technology.

Literature Review

Cuba has been isolated from the West since the 1960s. Slowly, its borders are opening up to western nations allowing them to experience the country lost in time. There is a general lack of knowledge in the United States about life in Cuba. To obtain more knowledge, a literature review was conducted using electronic databases from the Hunt Library. The literature review includes articles found in popular publications and journals that identified that the lack of technology in Cuba was caused by limited investments, slim amounts of technological education, and strict government control on the flow of information.

Lack of Investment and Accessibility

Lack of investments to creating available technology in Cuba is highlighted by the Xinhua News Agency (2015, Jun 18). In the modern era, just about all transfers of information flow through technology, and Cubans have next to no access to internet. With only 35 public Wi-Fi locations and very few crowded cybercafés, only 5-10 percent of Cubans have any type of access to technology (Thibodeau, 2015). Figure 2 highlights the few areas where Wi-Fi can be found on the island. All of these Wi-Fi, or internet points, are extremely expensive to people who do not belong to the upper class. The average wage of a middle class worker a month is 20 Cuban Convertible Pesos (1 CUC is equivalent to 1 U.S. Dollar) and internet would cost 3 CUC, 10 percent of their monthly earnings (Sanchez, 2011). Murphy adds to the conversation stating the fact that out of the 11.25 million people on the island only 1.2 million have landlines as seen in Figure 1.

Sanchez (2011) and Ritter (2017) dive deeper, highlighting the limitations of the small technology businesses who cannot communicate efficiently with their employers due to the lack of internet. Some of these limitations included how Cubans are not able to send business emails,

buy bus or plane tickets online, manage a bank account or phone bill online. Ritter highlights how it is possible to have a widely used cell phone application, but it would have to run off Wi-Fi (2017). For example, one startup is a Cuban based Yelp app called Conoce Cuba. Because of the U.S. Embargo, Conoce Cuba has had a very difficult time obtaining the hardware and materials needed to make their program. They work with cell phone sellers to provide free updates to the app (Ritter, 2016). Technology is scarce in many universities in Cuba, but they do offer the opportunity to learn about computer sciences and technology. Even though both Thibodeau and Venegas highlight the fact that many universities in Cuba do offer the opportunity to learn about computer sciences and technology, this small group of people tend to be part of the upper class who can afford Wi-Fi and electronics.

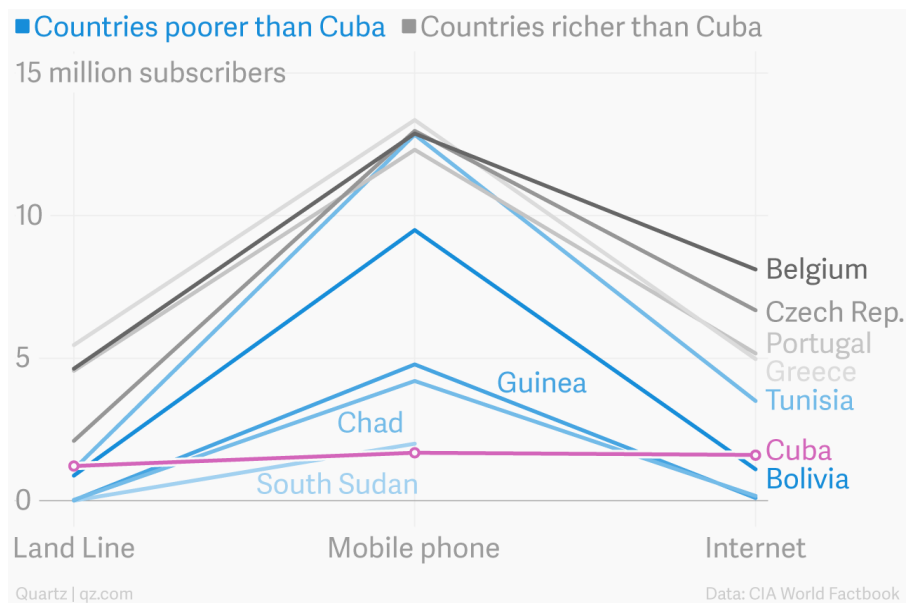


Figure 1: Cuba compared to similarly populous nations (Murphy, 2014)

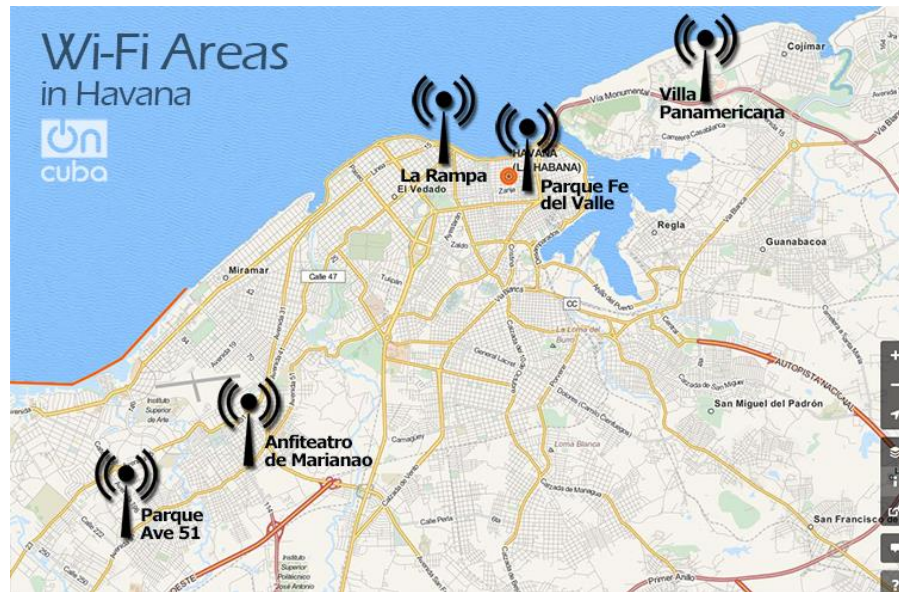


Figure 2: Areas with Wi-Fi in Havana (Ritter, 2016)

Limited Technological Education

In the United States 94 percent of U.S. schools have computers with internet, offering classes to learn how to operate them (National Center for Educational Statistics, 2008). In Cuba, things are completely different. Due to the lack of availability, high costs, and restrictions by the government, not many people have used a computer. There is not much information on grade schools utilizing technology to teach younger students, but there is evidence of computers being increasingly used in universities. Thibodeau (2015) and Venegas (2007) both agree that there are higher education programs in Cuba that teach computer science and technical technology skills. The University of Havana offers a degree in computer science, which is monitored by the government, who restricts what students learn. Students who attend schools of technology, like the University of Information Sciences, utilize the same modern computers as students in the U.S., but lack reliable access to the internet (Venegas, 2007).

Government

Government in Cuba is very strict because it is a communist country. In 2010, there was a radio station in Cuba, funded by the U.S. State Department, called 'Voice of America'. The man in charge of the station was arrested because he was trying to help Cuba's Jewish community increase their internet connectivity. He was held in Cuba and released in 2011 (Wylie, L. et al, 2013).

Additionally, those who do have internet access in Cuba attain it through their jobs or government positions. The Cuban government has worked with the internet provider *Etecsa* to monitor and block access to certain websites. As Thibodeau (2015, January 16) states, but at the moment it is limited to college students and is highly monitored. Xinhua News Agency (2015) explains that Cuba is trying to increase the amount of locations and access points to the internet. Despite new businesses and sources of information becoming available, restrictions on information are still high and very present.

Furthermore, Murphy (2014, December 18) wrote that the Cuban government does not plan on loosening up their restrictions, instead they plan to instill more. Ritter (2017, February 24) also elaborates on how 70 to 80 percent of Cuba's small businesses are funded with remittances and family money because there are no government funds that support tech businesses.

After a review of literature one can conclude that access to technology is sparse, located in urban areas, heavily regulated, and is expensive. These factors combine to make access of technology limited.

Methodology

Before flying to Cuba, research was conducted through the Embry-Riddle Hunt Library along with ProQuest. Documents regarding technology in terms of phones, wireless internet, and computers were accumulated.

Interviews were conducted during a university trip to Cuba over seven days. The tour guide and a professor at the University of Havana were interviewed, as they were the most fluent English speakers encountered while in Cuba. These interviews were recorded in order to get complete documentation of the interaction, and gave the team the ability to reference back for key details. Interview questions can be found in the appendix.

Personal observations were made during the trip to Cuba, in which the usage and accessibility of computers, cell phones, and Wi-Fi were observed. In addition, the types of unique forms of technology or communication usage in the form of advertisements and airport security were also observed. Data was collected through several methods and observations were documented with photographs, videos, and a daily personal journal.

Results

Usage and Availability of Cell Phones

The majority of middle class Cubans in Havana and surrounding cities have cell phones (Silva, C. 2015). In the airport, hotels, restaurants, and all over the city Cubans were using cell phones. These phones were all either Samsung cell phones or landlines. In different locations, many Cubans were taking photos on their cell phones, recording videos, or on Facebook. In downtown Old Havana, Cubans walked around with cell phones, but those at the boutiques, indoor shops, or in the country had landlines.

In inland towns, many Cubans did not have cell phones. There were more pay phones, attached to the sides of buildings, and landlines than in Havana. In Viñales there were many phone booths along the sides of buildings downtown. At the airport by the currency exchange, there were modern ATM machines and phone booths where there was a line of about 10 Cubans waiting to call family or friends. At the Hotel Copacabana there were six phone booths outside and one inside that many Cubans used. Cuban military personnel and police did not have cell phones, instead they walked around the country carrying walkie-talkies.



Figure 3: Cuban Samsung Phone Usage



Figure 4: Phone Booths

Technological Advertisements

At the José Martí International Airport, there were many advertisements for the Galaxy S7 Edge as seen in Figure 5. At many of the main tourist locations, there were electronic billboards, sponsored by Samsung, advertising things like shows, parades, etc. directed towards tourists (Figure 6). Within the Cuban Museum of Fine Arts, there were electronic displays of children's art on large monitors, which alternated between art and different events at the museum.



Figure 5: Cell Phone Advertisement, José Martí International Airport



Figure 6: Electronic Billboard, Old Havana

Usage and Availability of Wi-Fi

At the airport there were few personal Wi-Fi networks available and absolutely no public networks available. The Hotel Copa Cabana offered Wi-Fi in only the lobby. Two computers, located by the front, door where visitors could access work, along with the internet as long as the user entered their Wi-Fi log in in order to get it to operate (Figure 7). At the hotel, the front desk offered 1 hour of Wi-Fi for 3 CUP. During high traffic hours, the hotel Wi-Fi was very poor. At the hotels in Old Havana, researchers looked to see if there was Wi-Fi available and it was found that it was. Each hotel had the same Wi-Fi as the Hotel Copa Cabana, with the title ‘Nauta [hotel abbreviation],’ also known as *Etecsa*, as seen in both Figures 5 and 6.

At many popular tourist restaurants, Wi-Fi was available if customers had prepaid card WI-FI cards. In downtown Viñales, there was a Wi-Fi Park with slow internet speeds and was serviced by *Etecsa* as well.

Attempting to make outbound calls while connected to Wi-Fi was almost impossible in Cuba. The researchers attempted to make successful outbound call using Wi-Fi calling, Facebook chat calling, and Skype. Facebook chat worked for a few minutes before it cut out. Apple iMessage, Facebook messenger, Google, Instagram, and email all worked on the Wi-Fi with very few stutters; any other application, such as Snap Chat, with a stream of foreign, unregulated news, for instance The New York Times, would not load, and was marked as restricted.

Alejandro Picart Tirado, the tour guide, mentioned that all primary schools now have a computer room where a required computer class is taught. The students learn the basics of Microsoft products, such as Word and PowerPoint. He also shared that there is a major issue with the Wi-Fi: the signal is very poor and slow, meaning the young students do not get much

internet time (A. Tirado, personal communication, March 13, 2017). Additionally, Maria Elena Martin, a professor of architecture at the University of Havana, shared that at colleges the internet is better than at the primary schools, but still didn't function at a fast speed (personal communication, March 13, 2017).

Tirado also communicated that the internet is not regulated in Cuba. The black market is very prevalent when it comes to obtaining new TV shows, videos, movies, and music. These items are accessible from 'the package', which is a hard drive that is passed around daily with new shows, music, and other materials to download. Tirado shared that this can also be done through the internet or cell phone apps. Copyright has no impact in Cuba; anything can be downloaded and passed around easily through a landline or Wi-Fi (A. Tirado, personal communication, March 13, 2017).



2:22 PM
Log In - NAUTA_SOC_GALLEGA

nauta  **Wi-Fi**

English Español

¡NUEVO! Su cuenta Nauta puede ser recargada desde el exterior. Consulte www.etecsa.cu

Usuario:

Contraseña:

Figure 7: Wi-Fi Log In 1

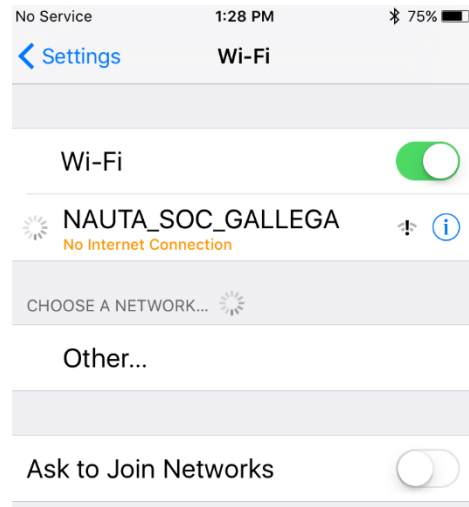


Figure 8: Wi-Fi Log In 2

Usage and Availability of Computers

In the José Martí International Airport, the customs desk had a Logitech, modern computer camera, at each station, connected to a computer. The computer was a desktop that appeared to be 10 years old and assembled with parts from different computers. The computer system was surprisingly efficient and moved quickly for its age. The computers were directly connected to the internet through an Ethernet port. Furthermore, at the Hotel Copa Cabana, the check in system used older laptops as well. In the lobby, there were two free computers for use of hotel visitors, but one required users to enter a Wi-Fi card into the system to get it to work (Figure 8). Additionally, at the disco next to the hotel, they utilized music and videos from the black market on a laptop. In many of the private businesses, technology was very modern with laptops.

Access to technology is inhibited by cost for the average Cuban. Alejandro Picart Tirado shared that laptops are incredibly expensive, but the government was trying to help increase the flow of technology (Personal Communication, March 12, 2017). In their efforts to increase

technology, the Cuban government purchased over a thousand laptops from Spain in order to assist medical professionals.

During a conversation with Maria Elena Martin (March 13, 2017), shared that students utilize many coding languages like C and Python. Many students do not own personal laptops, but the schools have many accessible computers available for students to use.



Figure 9: Computer in the Hotel Copa Cabana

Analysis

Government restrictions

Cuba is an oppressed, communist country working to climb out of its isolation after the lift of the embargo. Right now their economy its focus is on increasing tourism. Being that the Cuban government has decided to focus on tourism instead of its citizens, many Cubans lack access to reasonably priced modern technology, such as personal computers, cell phones, and Wi-Fi. Despite the lack of reasonable pricing, it was surprising to see that people living in urban settings actually had cell phones, most likely because tourists would rather visit urban over rural communities.

The government limits the amount of communication Cubanos have. Wi-Fi is regulated through one company, *Etecsa*, who works with the government and is the only provider on the island. The prices *Etecsa* charges are too steep in comparison to the wages the average Cuban earns. It appears to be a government policy to limit the spread of information out of fear that it could spark revolts from the citizens of the communist country. Those who do have access are either very wealthy or work for the government. Furthermore, there are government restrictions on what news sources are available for common Cubans to access online to keep them in the dark.

The government also is in control of technology associated with education. The fact that the government has taken a step towards increasing the flow of basic computer literacy shows that it is interested in putting the money into the development of its people, but with some restrictions. The Government is aware that they need their citizens to improve their skills as they transition to modern equipment and accessibility to the internet so their businesses can compete with the rest of the world.

Lack of Accessibility

Cuba has tried to keep up with the innovation occurring around the world, but is still lacking in some areas, such as accessibility and reliability. The Wi-Fi in Cuba is very sparse compared to the United States where a majority of Americans enjoy Wi-Fi in workplaces, public spaces, and private homes. The Wi-Fi is treated as a scarce commodity, people pay large fees to wait for the service to connect slowly until either he/she has finished their obligations or they are removed from the network due to time constrictions or an overload of the network. Even in all levels of education the Wi-Fi is unreliable and prevents the ability to access new information. Many Cubans are left in the dark about aspects of history and are lead to believe what they are told (cannot fact check without the internet) vs being able to view opposing facts.

Beyond the accessibility of the internet, it is extremely expensive to call someone one area code over in comparison to calling someone just down the street in Cuba (Alejandro Picart Tirado, March 14, 2017). The price mobile phones is extremely expensive due to government importing regulations, therefore many residence only communicated to their family and friends within their town.

Despite there being very little internet services on the island, many Cubanos have cellular devices. In Havana, the majority of people passed on the streets had a cell phone. However, when entering rural settings, heading towards the tobacco and coffee fields, landlines and phone booths became more predominant and cell phones became less noticeable.

Lack of Investment

There is an incredible lack of investment into expanding the internet infrastructure for Cubans. This has limited the flow of advancements from around the world to the Cubanos.

Nearly all government personnel and doctors have access to a laptop. The investment in the education system is present as the Cuban education system incorporates computers to get students well versed with computer programs for the future. In contrast, personal computers are incredibly expensive to the average Cuban. Cubans make do with their resources and build their own desktop computers using parts from many different older systems. Cubans who can afford it resort to Internet café's to use a computer with internet service. The government is attempting to make things more accessible as the tourist economy booms by selling items such as computers, at a lower price to its citizens. Personal computers are rare, but the government does have large electronic billboards around the city to advertise events to tourists as seen in Figure 3. These billboards are targeted directly towards tourists and hold no useful information for Cubans living in the city. This shows that the government does have the money to invest into furthering technology, but may not be using it to the countries benefit. It seemed as if the Cuban government wanted tourists to believe that Cuba was becoming more modernized than it actually was because once you head further inland advertisements are no long noticeable and modern technology feels like a thing of the past. Tourism is Cuba's biggest investor, and without it there is very little cash flow. Despite having an increase in tourism, it seems as if the government has priorities that do not include introducing Cubanos to the modern world.

Recommendations/Conclusion

Cuba is an oppressed country where tourism is the country's main economical focus. Because of this Wifi is very sparse and not at all free so only tourists and the wealthy can afford it. Many people outside of the cities do not have cell phones, and can only afford landlines. Personal computers and laptops are incredibly expensive, but the government is working to make them more affordable. There was an abundance of Samsung cell phones in Cuba along with

many electronic advertisements by Samsung. Surprisingly, in downtown Havana tablets were commonly found with children. In conclusion technology is limited due to government privacy restrictions, limited access, and lack of funding.

Recommendations

If one so desired to repeat this research he or she should do a multitude of things. The length of time spent in Cuba conducting research should be expanded. In addition, data should be gathered from each different region of Cuba, not just the region around Havana. Furthermore, in order to gather more information about the impacts of technology in education it would be best to get permission to interview teachers and students from both colleges and grade schools. Lastly, it would be best to accumulate more interviews with people from different backgrounds, location, and economic status.

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Appendix

When conducting research the research questions being considered include:

- What is the availability of Wi-Fi?
- What is the quality of Wi-Fi?
- What is the availability of Cell Phones?
- What is the availability of computers? Personal computers?
- What is the availability of Wi-Fi in education?
- What is the Availability of computers in education?
- What can and can you not do on the internet?

Research Questions:

- Do you use a computer in their daily lives?
- Do you own a computer?
- Do you feel the need for one or no?
- Do you use Wi-Fi? What is the quality of it?
- What can you share about technology usage used in education?