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Revolution of technology in the new normal

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ABSTRACT

Technology has become a part and parcel of life in the 'new normal'. The life in the 'new normal' is using technology for daily affairs. The COVID-19 pandemic spread expeditiously across the world leaving nothing but devastation along its way. Apart from causing medical complications and deaths, it has left the world in economic despondency. The pandemic compelled the people to put a stop to their daily schedules, hunker down in their homes, and limit all social contact to protect themselves and their loved ones. The ongoing crisis has thrown into sharp focus, the importance of digital connectivity in daily life. It has become crucial for schools, governments, corporates, as well as consumers to rely on digital channels for accessing education, goods, services, information, and entertainment. Apart from work, technology has ingrained itself in our personal lives. Socializing, streaming movies, listening to music, entertainment all lean on technology. We now happen to see more of our phone's blue light than the sunlight! Technology generates solutions for everyday life and contributes to resolving the conundrums of the universe. Technology has an array of functions for the prosperity of the society which includes bringing into light new knowledge, bettering education, and increasing the quality of life of all living beings.

"The secret of change is to focus all of your energy, not on fighting the old, but on building the new" - Socrates

This research paper covers the revolution of technology and its heightened importance in the ongoing and post pandemic life of people in all sectors and fields.

Keywords— *New normal, COVID- 19, Operations, Connectivity, Solutions, Pandemic*

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1.1 Objectives of the Study

While some hope for normalcy to return, others have realized that what was normal was clearly not equitable and will not be retracing its steps backwards. This research paper will be analyzing the role that technology has played in sweeping away the chaos caused by the pandemic in people's life and the economy and how it has changed the definitions of e-learning and workplace (Figure 1). It will talk about how the new normal continues to evolve and how technology is making it achievable.

The COVID- 19 crisis has thrown light onto the need and value of digital connectivity and knowledge. Issues like gaps that exist in access to technology, divide in access to high speed and stable mobile connectivity, and paucity of digital skills, affordability, and admissible content in local languages, will be discussed in detail. The increase in investments by corporates in robotic process automation and automated solutions and how innovations like these will bolster and ameliorate the user experience and operational efficiency, will also be highlighted in the paper.

The COVID-19 pandemic has made the urgency of the digital inclusion agenda visible. While the crisis has made possible for millions of people to work, learn, and connect digitally, it is obvious that the pandemic has also inflamed the situation for far too many people in vulnerable situations across the globe. Now, more than ever, connectivity should be at the core of all international and national priorities – from education, healthcare, government services and beyond. This new normal has presented an unparalleled fighting chance for cross-sector collaboration to wing the digital divide and enable unanticipated advancement opportunities for the economy and society.

1.2 Workspace in the new normal



Figure 1

Note: Illustration showing the redefined workplace in the new normal. From (Technology Challenges in the Pandemic's 'New Normal' (dice.com))

1.3 The New Look of Technology

Technology is obviously the main warrior in the battle against COVID-19. The pandemic has become an unexpected catalyst for change. It has transformed the importance and role of digital experience in the lives of people. Digital transformation will significantly intensify economic developments. Businesses too will need to match its pace with the continuous modernization in order to remain in the competition. Opportunities that businesses expected to have years to prepare for are approaching quickly. To meet these challenges, organizations will need to invent, innovate, and redefine themselves. People are depending on technology more than ever for various purposes whether it is related to their day-to-day activities or recreational activities or work or education. We are living in an unprecedented time, heading into a fast-changing future.

2. INNOVATION EDUCATION

The pandemic resulted in closing of schools across the world. Globally an estimate of 1.2 billion children were out of classrooms (Figure 2). When the students heard the news of shutting of educational institutes, laughter could be heard in the hallways of almost all educational institutes, but they had failed to realize what had struck them like a wrecking ball. Education has changed drastically over a period of 12 months.

2.1 Sudden Shift

When this sudden shift had occurred, there was confusion and doubts if online learning would be good enough or how such a shift would jolt the worldwide education market. Researches suggested that “online learning has been shown to increase retention of information and take less time”. Online learning aided students to learn at their own pace, revise difficult topics countless times, skipping and re-reading. The effectiveness of online learning varies for people belonging to different age groups. Young kids tend to get easily distracted. *According to Dowson Tong, Senior Executive Vice President of Tencent and President of its Cloud and Smart Industries Group, to get the full benefit of digital learning, those methods should be used which promote “inclusion, personalization and intelligence”.* *According to BYJU's Mrinal Mohit. “Over a period, we have observed that clever integration of games has demonstrated higher engagement and increased motivation towards learning especially among younger students, making them truly fall in love with learning”*

2.2 Pre COVID-19

The popularity of education technology had started growing in the pre covid-19 era. Global EdTech investments reached “US\$18.66 billion in 2019 and the overall market for online education projected to reach \$350 Billion by 2025.” Virtual tutoring, language apps, online learning software, or video conferencing tools, had been popular and ever since covid-19 there has been a significant surge in their usage.

2.3 Issues Faced

One of the major issues faced was the unequal distribution of education as the backward/rural people did not have the resources to avail online education. Students without stable internet connectivity or the necessary technology support, struggled to participate in online learning. This digital divide varied from country to country. For example, while 95% of students in countries like Norway, Austria and Switzerland had a computer for their educational purposes, in Indonesia only 34% students had the necessary resources (according to OECD data). The luxury of online education could not be taken advantage of by the disadvantaged backgrounds whereas almost ALL 15-year-old from a privileged background had a laptop/computer to work on. The governments of different countries put in efforts to bridge this digital divide. A structured and organized environment is also equally imperative to ensure the effectiveness and efficiency of digital learning. Houses with a disordered environment caused due to various reasons such as unhappy family, construction work and many more.

2.4 Digital Teaching

Online learning did not only affect students but also the teachers. It was a difficult job for the teachers to adapt to this new method of teaching but once they got a hold of it, they too realized that in some ways online learning could prove to be more beneficial than

the existing methods. Dr Amjad, a Professor at The University of Jordan, said, "It has changed the way of teaching. It enables me to reach out to my students more efficiently and effectively through chat groups, video meetings, voting and also document sharing, especially during this pandemic. My students also find it is easier to communicate on Lark. I will stick to Lark even after coronavirus, I believe traditional offline learning and e-learning can go hand by hand." it can be argued that where some teachers appreciated online learning others opposed this idea by stating various reasons such as the teacher too might have internet issues, good teachers might not have the resources to buy the means for effective online education and mixing personal and professional life may decrease the efficiency of the teachers.

It is clear that a changing means of education is imperative. Online learning, something vastly different from the traditional methods, could prove to be a catalyst to adaptability, creative thinking, and successful future.

3. NAVIGATING COMMUNICATION IN THE NEW NORMAL

The pandemic gave us many uncharted questions which motivated us to find ingenious solutions to the multiple issues that compelled us to stay at home. Countless challenges were faced by companies to keep the economy running and the people to maintain their physical and mental health, but technology helped in finding the solutions, by providing means to operate the workforce remotely and to ensure that people remained healthy.

3.1 The Customer Experience

The pandemic caused to customers to be left out of loop and control. The lack of direct contact with the customer forced the companies to take the digital route and use social media and other digital platforms to appease the customers. Organizations have started using emails, telephone calls, teleconferencing, and video conferencing on a greater scale for communicating with prospective customers.

- It is important to keep certain guidelines in check during communication through technology.
- Messages should be clear and simply understood. The tone of the message should be considerate to the current economic and social conditions.
- The audience must always be kept in mind. It is essential to ensure that only true information is being conveyed.
- The communication channel should be chosen smartly to meet all the needs of the purpose of the meeting.
- Platforms such as Facebook, Instagram, Twitter offer dozens of opportunities which should not be missed.

The wants and needs of the customers have changed, it is fundamental for companies to retire the old information and formulate new plans in order to understand their new wants and needs. It is crucial for organizations to come up with a new model which focuses on customer agency. As an alternative to in-person gatherings, in the post covid world there will be a cardinal need for these digital platform's ad experiences. The enterprises that start building interactive, personalized, and shared virtual communities today can carry that accomplishments far into the future.

3.2 Digital Communication

The pandemic changed the definition of communication. People used digital platforms to communicate with their loved ones and entertainment. Voice calls, video calls, phone calls, online games, social media platforms and text messages became more popular. The use of these digital platforms helped the people to keep their hopes high and navigate these difficult times more easily.

During the first few months of the pandemic, studies show that the usage of digital media platforms tremendously increased as people spent more time at home due to lockdown. There was remarkable growth seen in the uptake of video conferencing apps.

There are also some people who diminished their communication through digital platforms during the pandemic. While a small splinter group (5%) used text messages less often, a greater number of people decreased their communication through social media (8%), video calls (13%), voice calls (9%), email (10%), and online games (17%). (See Figures 2 and 3)

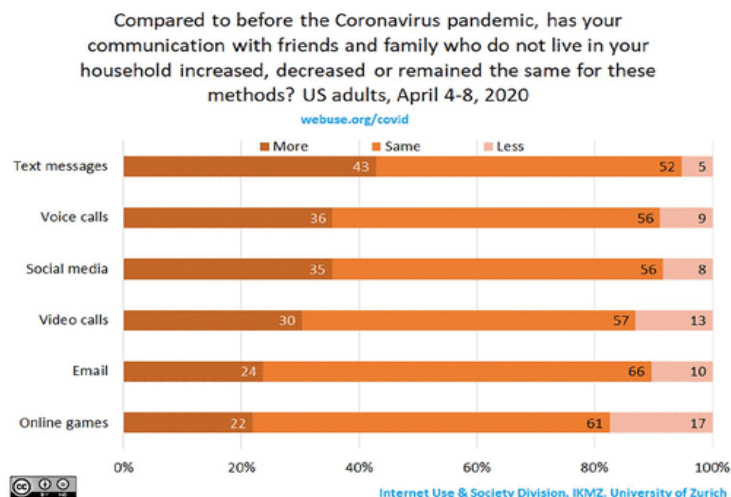


Figure 2. Changes in people's digital communication behaviors during the Coronavirus pandemic. (Changes in Digital Communication During the COVID-19 Global Pandemic: Implications for Digital Inequality and Future Research - Minh Hao Nguyen, Jonathan Gruber, Jaelle Fuchs, Will Marler, Amanda Hunsaker, Eszter Hargittai, 2020 (sagepub.com))

Who has increased digital communication via any method during the COVID-19 pandemic? Including text messages, voice calls, video calls, social media, email, and online games.

US adults, April 4-8, 2020

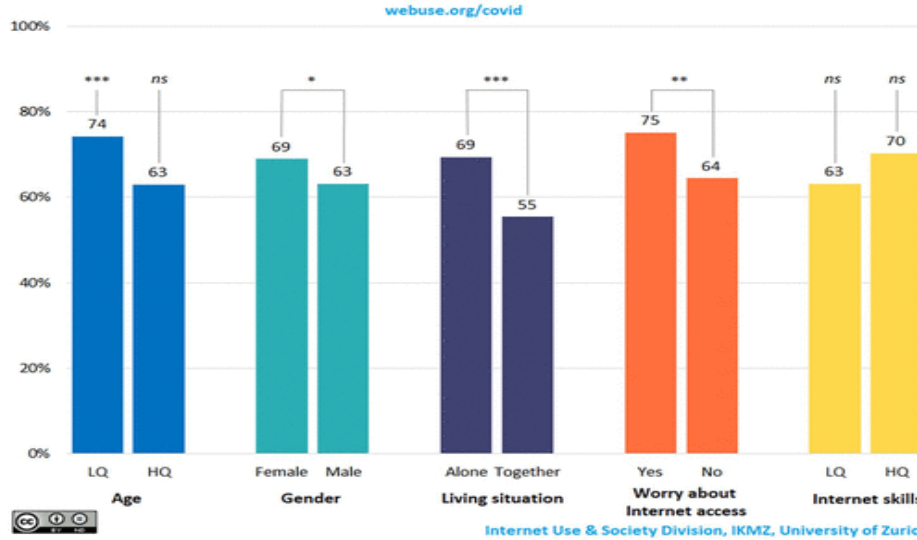


Figure 3. Increase in digital communication behaviors during the Coronavirus pandemic. (Changes in Digital Communication During the COVID-19 Global Pandemic: Implications for Digital Inequality and Future Research - Minh Hao Nguyen, Jonathan Gruber, Jaelle Fuchs, Will Marler, Amanda Hunsaker, Eszter Hargittai, 2020 (sagepub.com))

3.2.1 Digital Divide: There evidently exists gaps in digital access. Even fixed broadband subscribers do not get acceptable speed for effective working due to exorbitant load on the network. Fixed network penetration, coverage and speed are lacking in many middle- and low-income countries. Even in higher economies such as European or US markets the broadband subscribers 10% of the broadband subscribers still get speeds below 10Mbps and close to 30% below 30Mbps. Better speed would help enhance the usage of connectivity and enable improved virtual communication.

3.2.2 Digital Illiteracy: This happens to be another barrier. Digital literacy is defined as the ability to copy or move files or send emails. In backward economies, 68% of the population has paucity of basic digital skills. Digital literacy is also closely braided with the availability of admissible products, services, localized content, and attractive user consumption. Despite billions of dollars of investments, colossal connectivity progress globally and strong continued battles across the industry, these gaps have been intensified due to the pandemic and it is highly likely to persist and even aggravate once the world reaches a “new normal” with pervasive digitization across all aspects of life.

3.2.3 Social Inequality: Social inequality is reinforced by the digital divide. The pandemic had already led to the escalation in social inequality as those with less resources, having insecure and flexible jobs, were under the threat of losing the mode to their daily food. People working in crowded restaurants, buildings, public transport, living in packed communities were also more vulnerable to the virus. The digital divide also widened due to the pandemic. Those who had poor network or no digital access lacked the access to information about the virus, how it had to be handled and what all precautions were necessary. They were also denied the means to communicate with their loved ones as the countries had sealed their borders and the means of transport had shut down.

4. RECOMMENDATIONS

- (a) Reinvigorate social mobility everywhere.
- (b) Programs for disadvantaged groups to promote digital literacy.
- (c) Better government policy regarding access to the internet.
- (d) Cheaper access to digital technology.
- (e) The basic technology should be designed in such a way so it can be afforded by all.
- (f) Easily accessible materials with up-to-date information regarding COVID-19 should be provided in all local languages.
- (g) Mobile apps that are being used should have a user-friendly infrastructure so that it can be understood by everyone.

5. ROLE OF TECHNOLOGY IN ECONOMIC DEVELOPMENT

In a globalizing world economy, the cause for differences in economic growth and inter-country income bias is explained on the grounds of technological differences. Economic growth refers to the increase in number of the tools and products available to meet the human wants and needs in a country. Increase in the Gross Domestic Product (GDP) indicates economic growth. The main three indicators of economic growth are increase in work force and population, capital accumulation, and technological advances. Economic differences among the countries results in discrepancy in the quality of the lives of the people.

Technology can be regarded as the fundamental source of economic growth and development. Technological advancement in undeveloped countries can cause a great increase in the economic development. The level of technological advancement and economic growth are directly proportional to each other. “Schumpeter, an Austrian political economist, observed that innovation or technological advancement is the only determinant of economic progress. But if the level of technology becomes constant the

process of growth stops. Thus, it is the technological progress which keeps the economy moving. Inventions and innovations have been largely responsible for rapid economic prosperity in developed countries.”

Technology incorporates a huge body of knowledge and tools that ease the use of economic resources as a way to produce goods and services efficiently and innovatively.

- (a) Use of technology can help save time to produce goods and services and to deliver them. This can help increase the profits of businesses.
- (b) It increases the efficiency of the business which allows more profits to be generated by production of more goods and services with minimum costs.
- (c) Technology helps governments and businesses to efficiently use the natural resources in order to prevent overconsumption or improper utilization of resources. It makes the access to natural resources easier.
- (d) Advancement of technology also leads to increase in efficiency of the workers and labourers which helps increase total output and generate higher profits.
- (e) Use of E-platforms for selling goods and services has resulted in the growth of many small as well as big businesses. It allows businesses to conduct trade and share information in less time than the blink of an eye. It has made the access to products easier for the potential buyer.

The impact of technological development on the production function can be illustrated by the following example: the first graph represents isoquant of production function before technological changes and ‘R’ represents the same quantity after innovation. ‘R’ shows that the same output can be produced with less capital and less labor after technological advancements.

The second graph shows that innovation is labor saving and ‘R’ shows that same output can be produced with lesser inputs, but the saving of labor is greater than that of capital.

The third graph shows that the innovation is capital saving and ‘R’ shows that the same output can be produced by less inputs after technological change but saving of capital is greater than that of labor.

Technological and scientific changes act as a motivating power for developing economic policies which are adopted to ensure economic growth and development. Technological changes enhance social welfare as well as human development by increasing the number of choices and income levels and wealth. A research conducted shows that due to technological advancements, in comparison to the past, virtues like self-discipline are more valued, entrepreneurship increased, and people have taken to developing their technological skills to increase their capabilities for new job options.

Technology brings economic and military superiority to the countries. Science and technology enable enterprises and individuals to utilize technologies more efficiently, this results in reduced costs, enhanced productivity gains and higher profits. The use of new technologies paves the way for production of new cheaper goods and for capital accumulation, enhanced international competitiveness of individual countries, enhanced quality for scientific research institutions and it contributes to cultural and political development of societies.

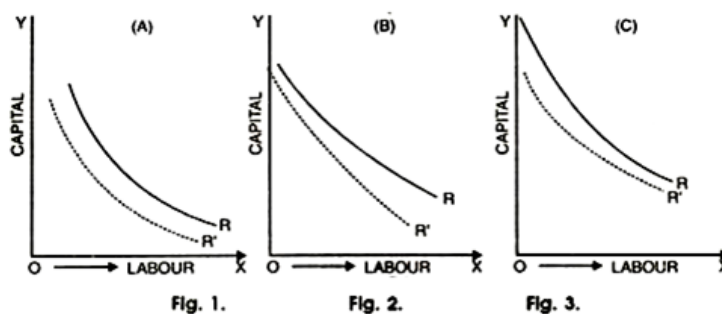


Figure 4. Impact of technological growth on production function.
(*Role of Technology in Economic Development (economicsdiscussion.net)*)

6. FUTURE OF TECHNOLOGY

It is just the beginning of a revolution. The future of technology is going to be even more interesting and mind boggling than what it is now.

Some of the near future predictions about how technology will shape the world in the next five years:

- (a) In the future carbon footprints will be as unacceptable as drunk driving is today. The pandemic has forced the people to take a step back and focus at the factors which pose a threat to their health. Carbon footprints is a subject of worldwide scrutiny. Countries will try to find ways in order to completely eliminate their carbon footprint and create a sustainable future.
- (b) Healthcare systems will have adopted more preventative approaches based on the developing science behind the health advantages of plant-rich, nutrient-dense diets. The pandemic has made the people more aware about the importance of maintain a good immunity system. Earth’s plant intelligence will be promoted by the health care systems as it benefits human health in dynamic ways.
- (c) In the new normal we will have found ways to manage cancer. Early and proactive screening will help in improving diagnostics innovations. This promises ease of testing and affordable treatment. The development of gene editing and immunotherapy will also play a great role.

- (d) Development in AI technology will help in connecting people which are physically apart and driving them closer to each other. Technology plays a very crucial role in facilitating and maintaining communication which has been clearly proved by the pandemic. The line between virtual and physical space will forever be blurred.
- (e) Faster, safer and more cost-effective ways will be developed to construct houses, factories, offices and other structures which help cities thrive. Precision, planning and execution will become easier which will make the job of construction professionals easier.
- (f) Technology development will also help in bridging the wealth gap. AI will make access to wealth creation available to the masses. Wealth management which is needed to preserve and grow your wealth has been out of the reach of those who needed it the most. This will not be the case in future.

7. CONCLUSION

Epidemics and pandemics have made the human race vulnerable from time to time, whether it was Ebola, Spanish Flu, Plague or Coronavirus. Although technology could not help to prevent the commencement of these outbreaks, it has helped by contributing to a diverse range of fields such as communication, education, economic growth, health, and socializing. Falsity about the numbers of vaccines, fatalities, medicines, and government policies created panic and widespread chaos among the people. This resulted in price rise, hoarding of essential items, unequal distribution of goods and violence. Google, YouTube, Twitter (Figure 5) and Facebook worked tirelessly to pilot people and provide them access to verifiable information and guidelines as issued by WHO, government or local authorities. It is technology that has made the possibility of producing the vaccine and its distribution among the people, possible. AI played an essential role in suggesting components of a vaccine by understanding viral protein structures, and helping medical researchers scour relevant research papers at a very rapid rate.

In order to keep pace with the new normal, companies too accelerated their dependency on technology by digitizing their customer interactions and internal operations. To stay competitive in this new economic and business environment, new and innovative strategies and practices were discovered and adopted. Customers too prefer to use digital channels which is clearly palpable in the rapid growth of the tech industry (Figure 6). As people were forced to stay at home, they resorted to technology too. This is clearly highlighted in the researches done which shows the increase in number of hours people spent on gaming and non-gaming apps such as Among us, Tinder Netflix, YouTube, Snapchat, and the growth of various companies such as Zoom, Tik Tok, Instagram, Amazon, Facebook etc. also acts as proof (Figure 7).

‘In this new normal, total connectivity requirement (for devices and services combined) could easily exceed \$4,000 per household annually in high income economies, about \$3,000 annually in middle-income countries and, even with concessions made on categories of devices purchased, approach \$1,000 annually in low-income countries.’ This ends up being extravagant for some households. The United Nations aims to reach 75% broadband internet infiltration by 2025 and have it cost no more than 2% of earnings in order to bridge the digital divide. The post-COVID-19 new normal will see accelerated increase in the need for digitization due to altering consumer habits and a desire to be prepared for future pandemics. ‘The augmentation of internet connectivity will drive significant progressive effects for the wider economy. For example, the World Bank has estimated that a 10% increase in fixed broadband penetration would increase GDP growth by 1.21% in developed economies and 1.38% in developing ones. Over the next five years, operators will invest \$1.1 trillion in their networks globally.’

To conclude, it is indisputable that technology has revolutionized due to the pandemic and will continue to advance to adapt to the changing situations. Technology has played a fundamental role in overcoming the challenges and will continue to do so. Technology has played a role of hope in these grim times where people were not allowed to meet their loved ones, businesses were collapsing, economies were crashing, and people were losing their lives to the virus.

The COVID-19 has created an ecosystem-wide innovation. The governments partnered up with hotels and social workers to put a stop to the spread of virus in crowded slums or shelters or providing space for quarantine. The pandemic drove enterprises to consider and test many new partnerships and possibilities. “The rules around innovation will never be the same.”

How social media platforms tackled fake claims



Figure 5. Coronavirus: How Facebook, TikTok and other apps tackle fake claims - BBC News

The COVID-19 crisis has accelerated the digitization of customer interactions by several years.

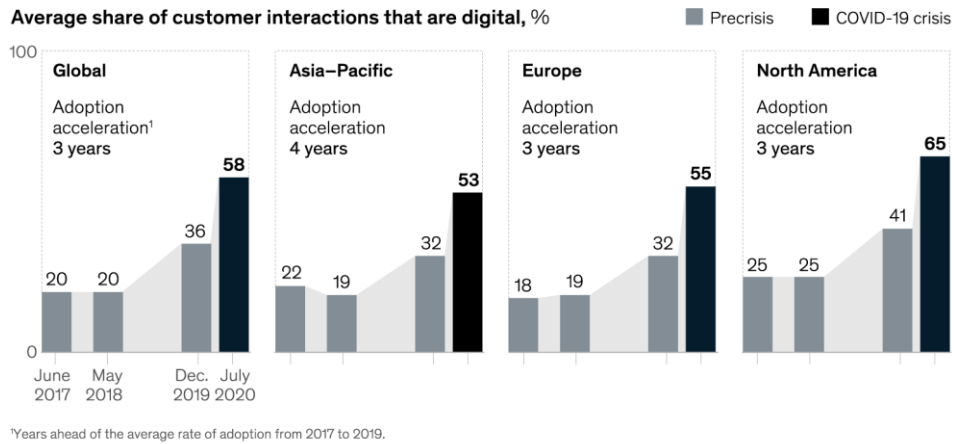


Figure 6. How COVID-19 has pushed companies over the technology tipping point—and transformed business forever (mckinsey.com)

The growth in use of apps worldwide

Top Apps Worldwide | Q1 2020 (vs. Q4 2019)



Figure 7. People Are Spending 20% More Time in Apps During the COVID-19 Lockdowns [Report] | Social Media Today

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