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LEVERAGING WORK FROM HOME FOR BUSINESS CONTINUITY DURING COVID-19 PANDEMIC–WITH REFERENCE TO BI SOLUTION ADOPTION

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Abstract: *The hasty outburst of the novel coronavirus COVID-19 has elevated the voices due to upsurge disease cases being reported across the continents. The COVID-19 is the seventh member in the coronavirus family, different from its predecessors MERS-CoV and SARS-CoV. The world has been facing an outbreak generated by the coronavirus and has no specific therapeutics or vaccines. In the absence of vaccines, governments across the continents have been implementing "Social Distancing" to the extent of curfew as a traditional public health measure. Due to the strict implementation of the social distancing, the businesses have converted their default operational mode as work from home. Meanwhile, the healthcare fraternity is working day and night to discover a breakthrough in the anti-coronavirus drug; it is essential to run the economic activities in parallel to save the world from the rescission. The global businesses are now identifying state-of-the-art ways to keep their business operations as usual. Before the COVID-19 pandemic, most organizations' primary focus was profit and wealth maximization rather than business continuity. Post disruptions, now organizations are adopting business continuity best practices. Adoption of analytics, business intelligence and artificial intelligence solution is a part of such measures, which ultimately help businesses to track and optimize. This research paper discusses the factors contributing to an organization's business continuity plan, including the adoption of Analytics and BI solutions. It also analyses the increased popularity of BI solution after coronavirus outbreaks. At the core, the big data, analytics, and BI solutions are also helping to track the virus and scrutinize public healthcare infrastructure availability. It enables the quick identification of the infected people, their travel history, and empowering administrative decision-makers to implement the best viable practice.*

Keywords: *Novel Coronavirus Pandemic, Business Continuity Plan, Business Intelligence, BI Solution Adoption, Work from Home*

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INTRODUCTION

The first human case of coronavirus, popularly known as COVID-19, subsequently named SARS-CoV-2, was reported by the administrators in Wuhan City, China. (World Health Organization, 2020). On 27th December 2019, Dr. Zhang Jixian, who was stricken by the coronavirus, was first alerted to the local administrations about the new transmissible disease (State Council Information, China, 2020). The earlier family of Coronavirus, Severe Acute Respiratory Syndrome e.g. SARS -CoV was scarier compared to COVID-19, given its higher progression to severe infection and death. The healthcare measures were implemented wisely to combat the SARS, which disrupted human-to-human spread and terminated the widespread, and finally, the SARS-CoV was eliminated. In the absence of effective vaccines, removal of SARS-CoV was achieved with strict implementation of conventional public health measures. (Severe Acute Respiratory Syndrome, 2005) (Goh, Cutter, Heng, Ma, Koh, Kwok, Toh, Chew, & Suok Kai, 2006). Though COVID-19 started transmitting by respiratory droplets similar to SARS coronavirus (SARS-CoV) (Zhu, Zhang, Wang, Li, Yang, Song, Zhao, Huang, Shi, Lu, Niu, Zhan, & Faxian, 2020), the number of COVID-19 cases are high in compression with SARS – CoV & Middle East Respiratory Syndrome Coronavirus (MERS-CoV). As per World Health Organization analysis as of the 31st December 2003, the total number of SARS – CoV cases were 8,096 out of which 774 people died; the total reported cases versus death percentage is almost 9%. (World Health Organization, 2003) Based on the data analysis from September 2012 to August 2019, the total number of MERS – CoV cases were 2,494, out of which 858 deaths occurred, the percentage of death is 26%. (World Health Organization, 2019). The rapid spreading of SARS – CoV 2 ignited a public health emergency, and the total number of cases was 14,538,094 until 21st July 2020, 12:00 AM CEST, which resulted in 607,358 deaths. (World Health Organization, 2020)

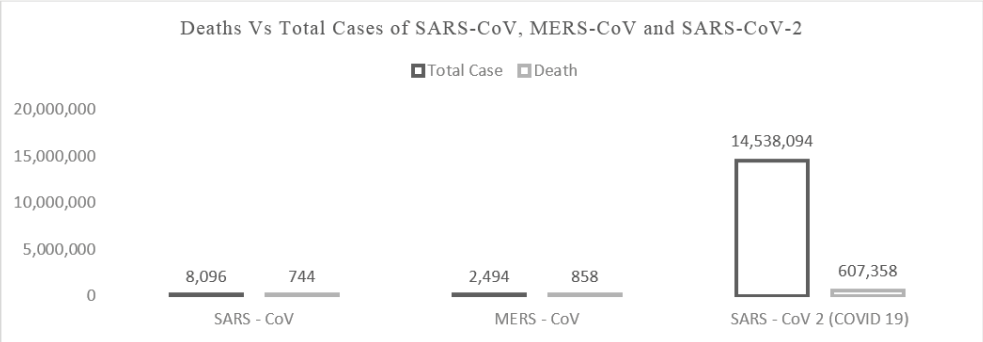

Figure 1- Total Cases Vs Deaths of SARS-CoV, MERS-CoV and SARS-CoV-2

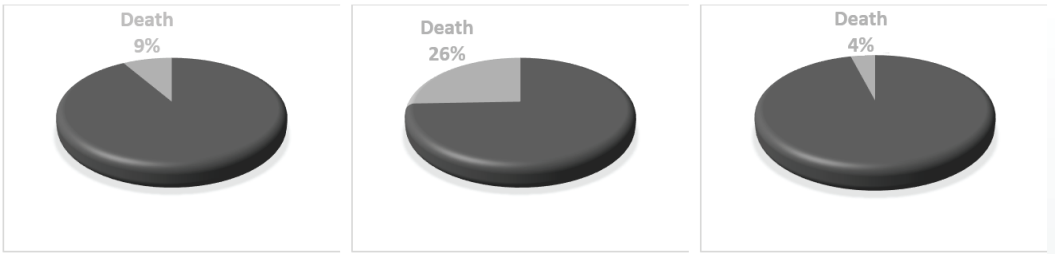

Figure 2 –A Mortality Rate of SARS-CoV, MERS-CoV and SARS-CoV-2

TRANSMISSION & PREVENTIVE MEASURES

After realizing the severity of coronavirus, the healthcare fraternity started the investigation about the COVID-19 outbreak & prevention mechanism. WHO releases guidelines to the public and its member countries to prevent COVID-19, a highly transmissible disease. (World Health Organization, 2020). The COVID-19 has elicited an alarming health crisis globally and forced across the governments to take robust measures to save their citizens, ultimately affecting their daily lives (World Health Organization, 2020). The response to a pandemic depends upon the country's political leadership, earlier at the time of SARS-CoV-2 epidemic, the response policies differed by the socio-political context. (Baekkeskov & Rubin, 2014) Though this time, the unique health safety technique, "Social Distancing," was applied across the countries to reduce the coronavirus transmission speed. (Gupta, 2020) (Chawla, 2020) The social distancing has been used in the form of physical contact restriction to full-fledged curfew. In past research, it has been identified that social distancing is an effective way to prevent epidemics and potentially be unfavourable for the economy. (Wilder-Smith & Freedman, 2020)

IMPACT OF COVID-19 ON BUSINESS ECOSYSTEM

WHO Director-General Dr. Tedros Adhanom Ghebreyesus stated on COVID-19; "We have a long way to go, this pandemic will remain with the human for a longer time. The world cannot go back to the way things were." (World Health Organization, 2020). Most of the business ecosystem depends heavily on in-person interactions or close physical meets at the different business stages, i.e. production, quality analysis, distribution, or sales. (Feddersen, Gottschalk, & Peters, 2017). Post-implementation of the governments' force lockdown, the industry around the world started encountering significant economic consequences. (Nair, 2020) These vulnerable service providers started realizing a severe problem after the implementation of Social Distancing. But simultaneously overcoming the same through manpower training and delighting the customers in area of after sales service is perquisite (Bagga & Khanna, 2014)). The stock markets reflect the world economy and always respond to the considerable incidents; similar to the previous pandemics. SARS – CoV and MERS - CoV (Al-Awadh, Alsaifia, Al-Awadhi, &

Alhammadi, 2020) the contagious COVID-19 has created an impact on the global stock markets. COVID- 19 pandemics have conceived the most unprecedented effect on the stock market in a more powerful way than Spanish flu. (Baker, Bloom, Davis, Kost, Sammon, Viratyosin, & Tasaneeya, 2020)

Within a short period, the cross-country pandemic elicited by the COVID-19 has claimed many lives. The Corona Virus has disrupted the businesses' operation and profitability abruptly. It has also applied severe restrictions to private and business growth. (Kraus, Clauss, Breier, Gast, Zardini, Tiberius, & Victor, 2020). To get the optimum output from the workforce is one of the critical needs of the hour. (Haider, Lübtow, Endres, Aseyev, Pöppler, Luxenhofer, & Robert, 2020) Due to the massive impact of COVID-19, many people have lost their jobs. The number was approximately 25 million in the USA during the mid of March and April 2020, which is way higher than any other pandemic, including the gigantic recession of 2007-09. (Petrosky-Nadeau & Valletta, 2020). There is a significant decrease in labour income across the globe, which has forced governments to unfold the bailout packages. (Malik, 2020) The COVID-19 has amplified the probability of sack or deterioration of employment around all the business domains. (Kartseva & Kuznetsova, 2020). The world has been actively budding the measures to support the industries and citizens who have lost their jobs due to the epidemic situation (Straubb & Spurka, 2020).

BUSINESS CONTINUITY MANAGEMENT (BCM) PRACTICES DURING THE COVID-19 OUTBREAK

"Business Continuity Management is a universal controlling procedure that categorizes the possible intimidations to a business, and the collisions to its operations threats, if gotten, might elicit". The BCM feeds a structure to activate organizational resilience with an operational retort's competency that upholds its key shareholders' interests, reputation, intellectual properties, and accomplishments. (Kim & Amran, 2018) (Disaster Recovery Institute International, 2017). The industries have faced a series of challenges due to the ongoing pandemic, in the form of layoffs, bankruptcies in affected sectors, supply-side issues due to lockdown and demand-side issues due to financial disruptions. (Gössling, Scott, & Hall, 2020). In this turbulent environment, organizations implement a full proof strategy and business continuity plan (BCP) to continue critical business operations. An optimum BCP enables an organization to absorb the disruption due to the unfavourable situation and help it return to the normal state as soon as possible. (Soufi, Torabi, & Sahebjamnia, 2018). Most of the businesses today expected to be "always-on," the adoption of "Work from Home" kept the promise of 24*7 availability unremitting. For optimum productivity, not only availability at work is essential; the optimum usage of resources is equally important, which made the implementation of BI and analytics solutions a need of the hour. As shown in figure 3, business continuity relies on computing technologies and always-

on information systems such as business intelligence and analytics solutions. (Bajgoric, 2018)

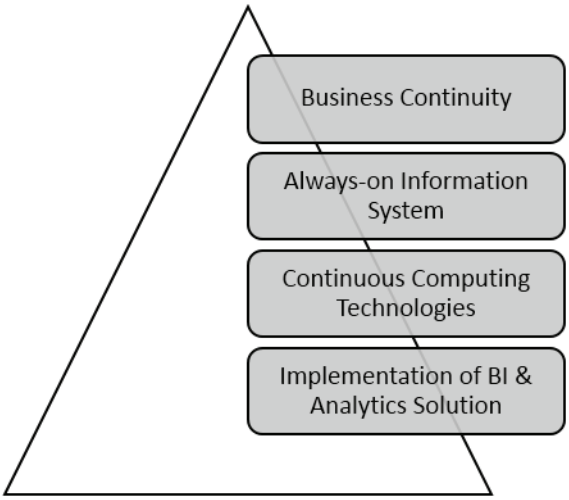

Figure 3 –Business Continuity (Always-on Business)

A competent crisis leadership can implement an effective business continuity plan (BCP) to optimize the organization's overall crisis performance. (Naser, Alharthi, & Khalifa, 2019) With outbreaks previous to novel coronavirus, the world never had experienced such a significant impact across the countries. In comparison to prior pandemics e.g., SARS and MERS, the coronavirus spread is even across the globe. Information on people's movement, travel restriction, behaviour, etc. plays a pivotal role in preventing the range across the community. The extraordinary impact of COVID-19 across the continents has ignited the need for exceptional digital solutions, contributing significantly to keeping the businesses disruption-free. The governments and businesses utilize social media (Bagga, 2012) and other web information to seek pandemic related data known as Infodemiology (i.e., information epidemiology). (Eysenbach, 2006)

Infodemiology refers to "the set of procedures, to study the health data on the internet to determine public health information (Al-garadi, Khan, Varathan, Mujtaba, & Al-Kabsi, 2016). Given the continuous mounting cases, businesses have been launching massive business continuity plans (BCP). Tata Consultancy Services (BSE: 532540, NSE: TCS), one of the top employers in 29 countries including North America, Europe, Asia Pacific, and Middle East (TCS, 2019), launched Secure Borderless Workspaces™ (SBWS™), model. This model sanctions its employees to work from home with minimal support from their colleagues working from offices. (TCS, Our Response To COVID-19, 2020) . The Work from Home (WFH) is the most forceful change, driven by COVID-19 across the

professions. Though some individuals had very minimal or no WFH experience, for example, primary education teachers, etc.; they are also forced by the law of the land, to adopt the work from home arrangements. (Kramer & Kramer, 2020)

Inclusion of Work from Home in Business Continuity Plan (BCP)

Businesses have adopted the work from home (WFH) measures to their business continuity plan. The WFH set-up has helped them in the preparedness of the pandemic and keep their business regular. The disruption has generated external and internal risks to companies. External threats can be categorized as a disaster, malware, economic slowdown, availability of the raw material, decrease in supply and demand, etc. In contrast, internal risks are categorized with human errors, underutilization of the resources, optimum productivity, etc. (Fani & Subriadi, 2019). The businesses are adopting advanced technology solutions, e.g., Intelligent Automation (Vishnoi, Tripathi, & Bagga, 2019), Internet of Things (IoT), Big Data Analytics, Marketing Intelligence (Vishnoi & Bagga, 2020) and Business Intelligence (BI) solutions, etc.(Kaushik & Bagga, 2020). This has helped them craft the innovative & productive form of business models. (Kent, 2020). Adaptation of such an advanced solution has made the traditional working models obsolete. Analytics & BI solutions focus not only on the strategic business continuity plan (BCP) by sustaining the continuity of existing processes. Instead, they are going the extra mile and modifying the existing business processes, e.g., Value Creation. (Marko, Heikkilä, Järveläinen, & Heikkilä, 2019).

The adoption of big data & predictive analytics has grown in the healthcare industry to facilitate better comprehension of drug discovery and innovations. The interactive dashboard of the analytics and BI solutions enables the granular insights to the policymakers. (Tripathi, Bagga, & Aggarwal, 2020). The BI and analytics solutions are capable of precise analysis of the data to provide actionable intelligence.(Tripathi & Bagga, 2020) These granular insights not only help businesses to combat the challenges like revenue swings, communication, prompt collaborations, resource precincts, process changes, demand fluctuations, and customer risk, to name a few. (InfoWorks, Inc., 2020) but also enrich companies to customise offerings in sync with customer preferences (Singh, Vishnoi, & Bagga, 2018).

Blockers to Adopt Work from Home

Coronavirus has affected the business landscape asymmetrically; employees working nearby are affected more than the professionals working remotely. It is also discovered in researches that the 'businesses' classified as more exposed to COVID-19 are less disturbed because of the huge number of essential workforces in their operations. (Béland, Wright, & Brodeur, 2020) COVID-19 has restricted the employees to their residences due to home quarantines and restriction imposed

by the governments. To implement the work from home (WFH) effectively, it is very imperative to keep the workforce informed via the right communication medium. When employees work from home, they have fewer opportunities to get information from their subordinates and peers. Figure 4 explains that the industry can be divided into three major categories concerning their WFH adoption. Certain organizations cannot adopt WFH at all; however, some of them can adopt with additional capital and operational cost. (Brynjolfsson & Horton, 2020)

Figure 4 – Adoption of Work From Home (WFH)

Trusting employees is the core of productive remote-work initiatives. (Christensen, 1992) Large and mid-size enterprises accept the importance of work from home (WFH) during the coronavirus pandemic. The cultural barrier is categorized as the key obstacle to the digital growth and adoption of the WFH; some other impediments are variation in individuals' beliefs, attitude towards work, core social values, thoughtful perspective, and human behaviour towards different situations, etc. Employees and employers both often miss that it in their mutual benefit, to act in the best interest of each other. The vice president of leading research and advisory giant Gartner (founded in 1979) Aaron McEwan says, "Remote-work success depends heavily on whether you trust employees to do their work even if you can't see them. In a Gartner Survey, it was admitted by 76% human resource managers. The team leaders have raised their concerns about productivity when their team works remotely. "But worries about employee productivity are often overblown," says McEwan. (Wiles, 2020).

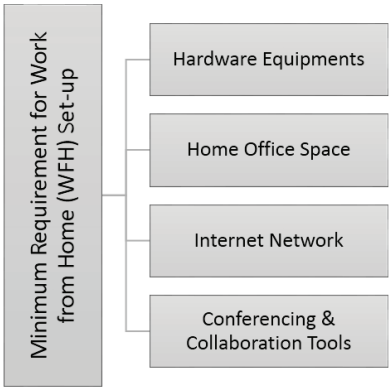

Figure 5 – Minimum Infrastructure Requirement for WFH

Before the coronavirus pandemic, there were limited remote workers in specific industries. Still, after the mandatory implementation of social distancing, the easy

work from home arrangements has been converted as a part of business continuity measures. This resulted in the implementation of the necessary technology at the home workstations. Figure 5 shows the crucial technology capabilities to enable the WFH and employee engagements. The infrastructure must be followed by the required training & technical support etc. to enable optimum productivity during work from home. (Rozwell, 2018)

BUSINESS INTELLIGENCE SOLUTIONS TO OPTIMISE THE WORK FROM HOME (WFH) PRODUCTIVITY

When time is favourable, businesses tend to spend less time analyzing and BI dashboard insights; the focus is more on the output maximization to meet the demand. In COVID-19 pandemic situation, Business Intelligence is an area of any business that shines. A comprehensive BI practice can help companies to define the correct measurements to endure a crisis way better, and these times can be proven a silver lining for many companies. As the cases of COVID-19 continue to rise globally (Signorini, Segre, & Polgreen, 2011), companies and governments around the world are executing measures to keep their staff and citizens safe and away from public gatherings – including corporate offices – in an attempt to neglect and slow down the spread of the coronavirus. (Henke, Saleh, & Puri, 2020) By adopting Business Intelligence, companies acquire the tools necessary for maintaining vital operational efficiencies. Business Intelligence allows companies a closer look at how they are operating by taking inventory of where correctly they are doing well and where it is an opportunity to improve. The purpose of BI is to leverage data to make decisions that will enhance and optimize revenue. (Negru , 2020)

During coronavirus pandemic situations, it is imperative to isolate the lags in the working environment. As a result of this, most businesses are adopting the advanced BI and analytics tools as a mandatory component of their business continuity plan. Organizations have been investing in technological advancements, for example. ERP, BI & Analytics solutions for decades. Starting from ERP in the early 1980s, data warehouse solutions in the 1990s, to the recent era of artificial intelligence (AI) and machine learning (ML) enabled software. (Ingebrigtsen, Georgiou, Williams, Magrabi, Hordern, Prgomet, Westbrook, Braithwaite, & Jeffrey, 2014) With the current pandemic situation and the necessary social distancing, organizations change the way they work and their policies. The AI-enabled solutions not only offer data and incident analytics but help with the actionable insights to the decision makes with their next-generation recommendation engine.

Some industries are forced to consider working remotely (e.g., non-frontline supporting staff in Healthcare facilities), many changes are going on, and specific protocols are being established on the fly. Business Intelligence plays an important role in this process because its core, the data-information-insight transformation, supports decision-making by nature and helps to monitor the outcome of the decision

so that adjustment could be made efficiently if necessary. (Kaushik & Guleria, 2020)

Before the coronavirus pandemic, a few organizations have utilized the advance BI solutions in the full capacity. (Gray, 2020) (Brownstein, Freifeld, & Madoff, 2009) Being an effective way of productivity, WFH also needs some solutions to optimize it. (Hickman & Robison, 2020) The manager-employee, employee-employee relationship, confidence & trust, clear goals & objective, consistent feedback & effective evaluation process hold at most importance in remote work implementation. (Jones, 2010). The overall digital strategy needs to be optimized under the below categories (Sharma, 2020)

Online Collaboration Tools

Work collaboration comprises communication, idea & file sharing, etc. The tools that enable collective work exists aplenty and are persistently advancing. However, the key challenges to facilitate combined exertion incorporates essentials of creative co-creation. Some of the leading collaboration tools are- Microsoft Office 360, Google suite, Slack (Searchable Log of All Conversation and Knowledge), etc.

Dark Factory

Industry 4.0 is the umbrella term for the fourth industrial revolutions, mainly utilizing digital advancements and tools. It empowers the makers to associate all machines, items, and administrations to a single network, and encourage Machine-to-Machine correspondence. The purpose is to make the data accessible to clients, providers, and different partners. (Al-garadi, Khan, Varathan, Mujtaba, & Al-Kabsi, 2016) Also, a definitive objective is to engage the clients to characterize their item determinations or customizations.

Adoption of Agility

Most organizations have a BCP manual that runs into an excess of hundred pages, which has been demonstrated ineffective during the COVID-19 pandemic circumstance. Along these lines, there's a need to have an Agile BCP that ought to be actuated with a negligible object, and surprisingly fast. Instead of half-yearly and yearly BCP drills.

CONCLUSION

The starting point of the SARS-CoV-2 was China, which is in direct supply chain connection with 51,000 manufacturing companies, including 163 Fortune 1000 companies. (Bobdey & Ray, 2020). SARS-CoV-2 has caused significant disruption to the business; multiple industries have been impacted like never before. It will take decades to recover the impact of the OCVID 19 on many countries' economies. The businesses have reported huge financial losses. 'How an organization responded

during the COVID-19 pandemic', will be remembered in the business community. With the right business continuity plan, the organizations can leave a positive legacy for a long-term promotion & benefit. After most governments have lifted the restriction partially to avoid long term impact on the economy, the restaurants, shops, places of worship, etc. have gradually commenced that have grieved through the lockdown. The business continuity was the crucial step taken by the business community to save their organizations. To cope up with the impact of the COVID-19, businesses have adopted work from home as their essential part of the new normal since the COVID-19 disruption started. The business intelligence solutions have played an out of the box role to implement the right practices across the operations segments. The challenges of skilling the resources, collaboration, communication, and motivation, etc. have been handled well by implementing the right BI solutions.

RESEARCH IMPLICATIONS

The research paper discusses the business continuity plan adaption during the pandemic. The work from home (WFH) is not only becoming an essential element of Business Continuity during the epidemic even will be a permanent mode of operation for the many industries. The coronavirus pandemic has established work from home as a primary modus operandi with a more excellent work-life balance to the employees. The research paper argues on the business intelligence solution and analytics tools, showing the managers a significant path towards productivity optimization. The right collaborative solution empowers decision-makers to analyze their subordinates' productivity and makes sure that the work from home is utilized judicially to achieve the organization's business vision. It enables a greater trust among the team members and across the organization and eases the process and cross-team collaboration.

RESEARCH LIMITATIONS AND FUTURE SCOPE OF RESEARCH

The COVID-19 pandemic's timing was near to Lunar New Year, which was a scary situation to be in. It became the reason for unlimited travel cancellation and a humongous financial loss to businesses, industries, and countries. The global manufacturing supply chain is negatively impacted due to the virus SARS-CoV-2 and associated preventive measures, making the implementation of the business continuity plan mandatory. This research paper discusses the utilization of work from home as an essential part of the business continuity plan (BCP). In its 2018 research, Gallup says that more than 70% of the USA employees are not engaged well in their work (Harter, 2018) The employee engagement is one of the essential parameters which needs to have adhered to. This paper argues how the BI solution implementation is a necessary element if you want to utilize the WFH effectively. With a higher engagement and collaboration, BI solution has helped to implement the right strategy. Though there are other dimensions of the business continuity,

all the dimensions are not covered in this research. The remaining magnitudes should be identified and executed in future research.

AUTHORS' CONTRIBUTION

Anuj Tripathi has incorporated the key solution drivers and information from the different sources and researched under the guidance of Dr. Teena Bagga.

CONFLICT OF INTEREST

The authors declare that they have no affiliation or association in any organization with any monetary interest or non-financial interest in the subject matter, or constituents discoursed in this manuscript.

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