Pandemic-Led Imperative Shift To Digital Transformation – A Critical Analysis

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Abstract

The coronavirus pandemic is essentially reshaping global businesses. At the onset of the pandemic and through its consecutive lockdown phases customers dramatically shifted towards online channels, so did corporates and businesses in each vertical. They responded quick to fill in the gap. The consolidation of core business with outsourcing facilities is the result of an invasive pace of digital transformation of business, a result of pandemic-led imperative shift in business models.

Another issue was that the pandemic speedily locked in countless individuals to 'work from home' (WFH). This created an on-the-spot challenge for a majority of the organizations to produce secure system access to employees. It witnessed a peremptory reset of organizations to digitization with a new aspect for evolving definition of job roles or modified job description for contemporary corporates. Also, most evidently, a hybrid work-model has emerged that has redefined several corporate rules and processes. The established corporates, tech-driven start-ups, however, managed to support a mass-scale digital training. The technology industry continues to record a positive graph in growth curve in FY2021. However, amongst various socio-economic implications of this change, technologically a growing trend to adopt the 3 Cs of Cloud Computing, Collaboration and Cybersecurity to manage the massive data is already visible. Added to this, a subsequent transition to blockchain for supply change management is vividly noticeable amongst enterprises. This quick adoption of digitization enhanced dependency on advanced digital solutions like cloud computing, amongst others. The resultant rising of the latest job roles that needs technologically versatile employees is another ever-changing situation in this context. This research paper deals in this aspect of the changing trends and tries to critically analyse certain paraphernalia associated to the present transformation.

Keywords: Digital Transformation, Pandemic, Start-Ups, Hybrid Work Model, Cloud Computing, Cybersecurity, Job Roles, Supply Chain Management, Blockchain, 3 D Printing

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Introduction

The abrupt challenges that the pandemic led to and resultant stagnation in business faced by enterprises because of Covid-19 in FY2020 and ongoing uncertainty in current FY2021 has led to two major paradigm shifts. Overall, there has been a clear adverse impact on business in India owing to demonetization, introduction of GST followed by the crisis brought by the pandemic. The unforeseen emergence of pandemic hit the business globally and there's an indispensable shift to digital transformation and adoption of a hybrid model of business. This quick digitization brought in changes in work culture, changed job descriptions and emergence of the latest job roles. In this phase the start-ups connected to computing, education, ICT related product and services that could be listed through e-commerce has been able to run and revive their business in the global market however, the rest of the business start-ups have witnessed a stagnation in smooth running of their business activities.

Aside from this, another evident change was the indispensable dependency on outsourcing of business verticals to tech-partners by non-tech enterprises. The latter half of FY2020 saw an accelerated growth of recent data led business models, therefore experiencing a deliberate recovery of the tech-driven sectors. As per Reports from excl. eCommerce,

India's technology industry, is predicted to the touch $194 billion in FY2021 and a positive growth of 2.3%.

From minor organizations to major enterprises, Cloud Solutions is no more strategies in boardroom discussions. Most of the business that are able to leverage the virtual platform has also inflated the popularity of cloud-based solutions and collaborations. What came together with cloud and collaboration is the inevitable question of Cybersecurity.

Literature Review

Due to the uncertainty of the pandemic, majority of the business undergone the invasive need for digitization and commenced at least some temporary digital solutions if not long-lasting even more quickly than they might ever imagine during the pre-pandemic situations.

Changing trends in Business Models

McKinsey reports that surveys reveal COVID-19 has *speeded the adoption of digital technologies by many years and that several of these changes can be here for the long haul.* The interaction with their customers and supply chain management necessitated an accelerated digitization of business operations, ahead by several years. Whereas their internal operations accelerated by three to four years, their digitally enabled product and services in their business portfolios have advanced by a walloping seven years.

The online survey, 2020 garnered responses from a few thousand C-level executives spanning a massive range of industries, company sizes, functional specialties and regions, say McKinsey Reports.

The Survey methodology involved observing the past results for the degree of digital adoption on varied business operations. Based on the average proportion of adoption in every survey, McKinsey calculated a trend line to represent the average rate of adoption in preceding years and simply before the crisis. The acceleration time-frame was calculated from the amount of time it might have taken to achieve the present level of digital adoption respondents report if the pre-crisis pace of change had continued.

Fig 1. Depicts acceleration in digitization of client interaction by many years in various zones. McKinsey reports that globally the ICT adoption is an average of three years, whereas in Asia-Pacific it's all the more advanced at 4 years. Both North America and Europe stand at a 3 years acceleration to adoption of digitization in their business pertaining to customer interaction. This suggests that given pre-pandemic situations, the adoption of digitization would have delayed on an average of these 3-4 years on the front of customer interaction.

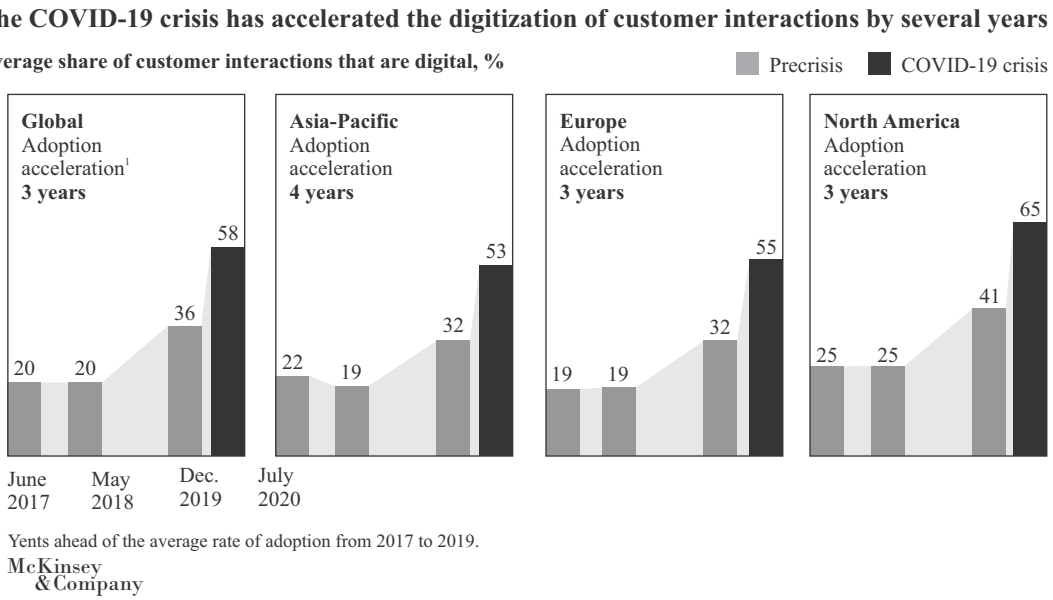


Figure 1: Acceleration in Digitization of Client interaction

Deloitte reports, *Rapid digital transformation has enabled organizations to respond and thrive during the pandemic. However, the less visible and more challenging transformation that additionally occurred was the abrupt demand to digitalize processes, together with previously paper-based transactions, in-person meetings, business travel, and other "normal" regular operations.* This speedy adoption of technology was imperative. Earlier business leaders from varied business verticals failed to see the shift to digitization as a priority. As a result of this, the digital transformation was growing step by step at its own pace in many regions through various industry verticals as and when deemed necessary. The World Economic Forum too notes through a superfluity of its publications at a global platform that inevitable transformation of business to a digital platform, sped up because of 'Work from Home' and rise in digital demands of customers. In line with The World Economic Forum, *the transition to a new model for supply chains are going to be underpinned by a speedy and wholesale digitization of the paperwork that accompanies global trade.*

Impact on Global Supply Chain Management

As per The World Economic Forum, India is likely to be benefited out of the inevitable shift. *The coronavirus pandemic has hit international trade and transactions at a new speed and scale. The role of the supply chain has never been more crucial.* The WEF states that the *impact of China's lockdown and its dominance in key areas of manufacturing have further highlighted the problem with modern supply chains. Once Chinese factories closed, makers struggled to pivot because of an absence of flexibility within their supplier base. One possible consequence is that global*

companies can diversify their supply chains in the future, rather than relying solely on China. Manufacturing hubs like Vietnam, Mexico, and India are likely to benefit from that shift. We are going to additionally see a decentralization of production capacity, with firms trying to bring production home. This trend grew with the likes of automation and small batch production, that had become so affordable that several nations started moving parts of their supply chain back home. A Report in Harvard Business Review says that the shift in geopolitical powers and international relations has forced manufacturers to assess their supply chain management. As per HBR, *the challenge for companies is going to be to make their supply chains a lot more resilient while not weakening their competitiveness.* There's an imperative need to increase domestic production and cut back dependency on 'risky resources. This eventually has triggered an increase in economic nationalism. There would be a domestic boost on native homegrown product, as dependency on lean inventories and just-in-time replenishments is not desirable.

Developing Strategies for a Virtual World

The strategic significance of technology has been a crucial aspect of the changing enterprise scenario. In this transforming global business, it calls for filling gaps with greater superior technology and need of a speedy innovation to have a competitive edge. Innovation has likely been in imparting and redesigning of offerings, blend of varieties of services and products than in new product development activities. The fast shift of clients to virtual platform showed a quick shift of businesses to respond in turn and take enterprise to virtual channels as by no means before. In Asia, reviews say that at the least eighty percentage of their consumer interactions are virtual in nature.

According to Excl.eCommerce reviews, the growing techniques for the brand new digitally evolving global companies has maximum of them increasing their outsourcing, adoption of the three Cs of technology, Cloud, Collaboration and Cybersecurity and Consolidation of the core business via mergers and acquisitions and the developing curve of virtual presence (Figure 2).

Trends that defined 2020 and expected to gain in 2021

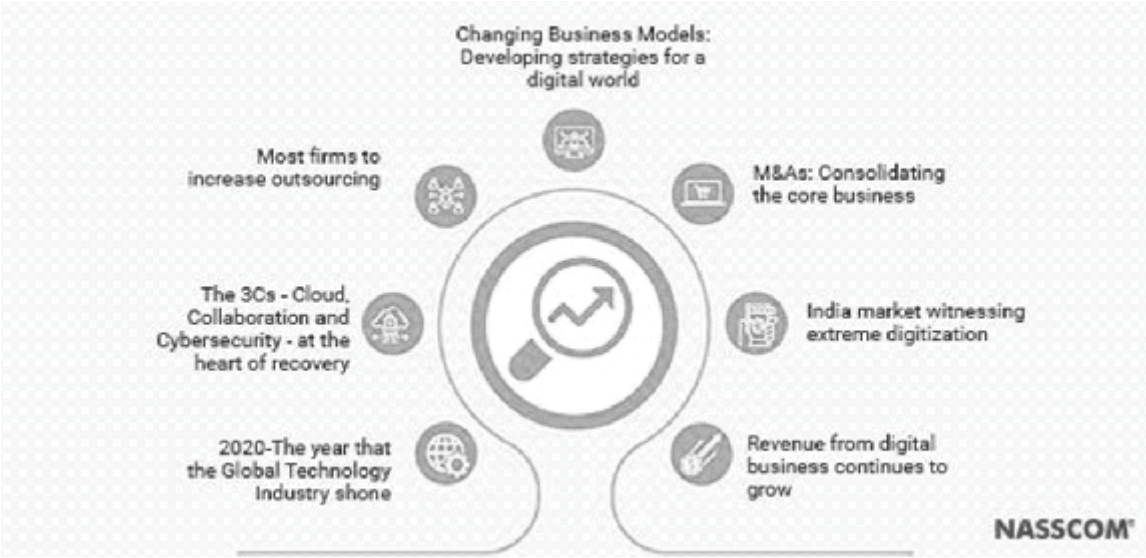


Figure 2: Source: NASSCOM Knowledge Center/ Publications

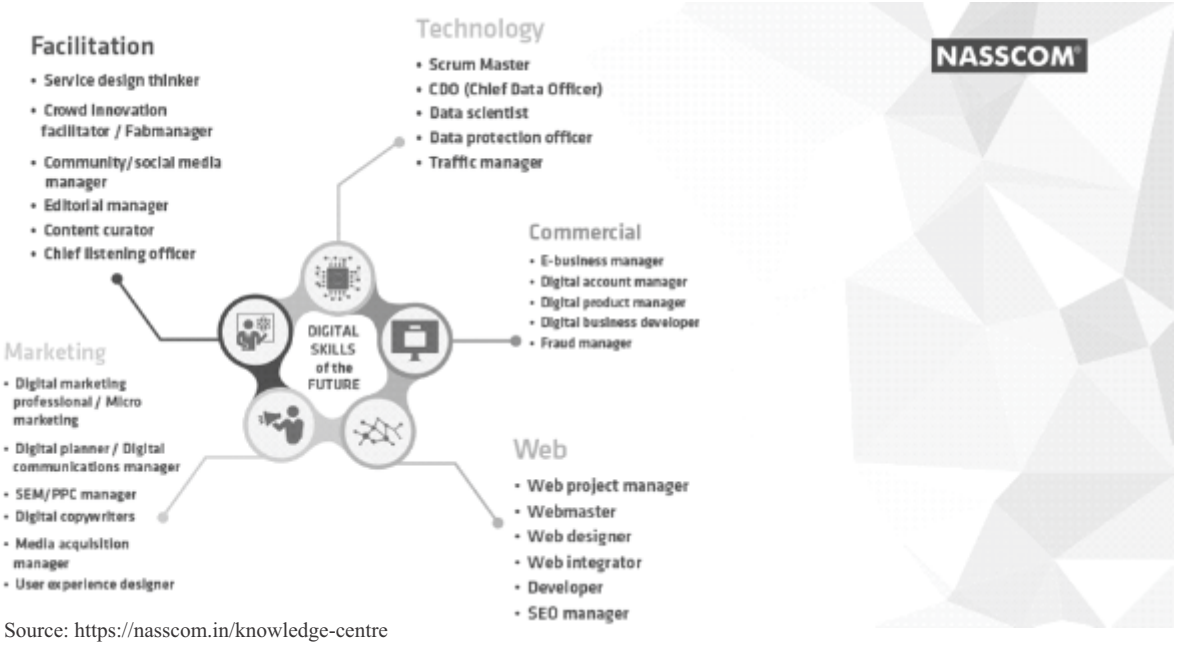
Paradigm Shift in Job Roles and Job Opportunities

This is a report that is referred from pre-pandemic time in 2019. According to the Pacific Economic Cooperation Council (PECC) report, *advancements in technology will affect greater than half of the team of workers in Asia, and up till 2030, one could count on extra losses than profits in employment opportunities. A precise sixty-four percent of the respondents anticipate a dip in the quantity of clerical roles. Also, a sharp fifty-nine percent in keeping with jobs related to plant and system operations staff, fifty-eight percent consider that the range of labourers in mining, construction, production and transportation will reduce, and fifty-six per cent assume that there can be fewer personnel in personal services and sales roles.* The surprising spur of digitization of personnel all through the pandemic and during the maladies ongoing in 2021 from around end of 2019 has seen alternatively a brand-new skill set to be evolved in and a few new job roles rising out of the virtual shift. These new roles rising out of greater dependency of enterprise in the direction of digitalization may be more or less categorized into the subsequent heads (Figure 3):

Facilitation: The broadening of spectrum in facilitation together with conventional roles include the Content Curator, Service Design Thinker, Crowd Innovation Facilitator, Social Media manager, Editorial manager and Chief Listening Officer.

Technology: In the sphere of technology there are new roles rising out of Cloud Computing, IoT, AI and varied data analytics that includes the emergence of Data Protection Officer, Data Scientist, Traffic Manager, Chief Data Officer, Scrum Master.

Commercial: The virtual competencies of the Future given the shift of business to digital systems, marks a developing need for process roles just like the Fraud Manager, Digital Business Developer, Digital Product Manager, E-Business Manager and Digital Account Manager



Source: https://nasscom.in/knowledge-centre

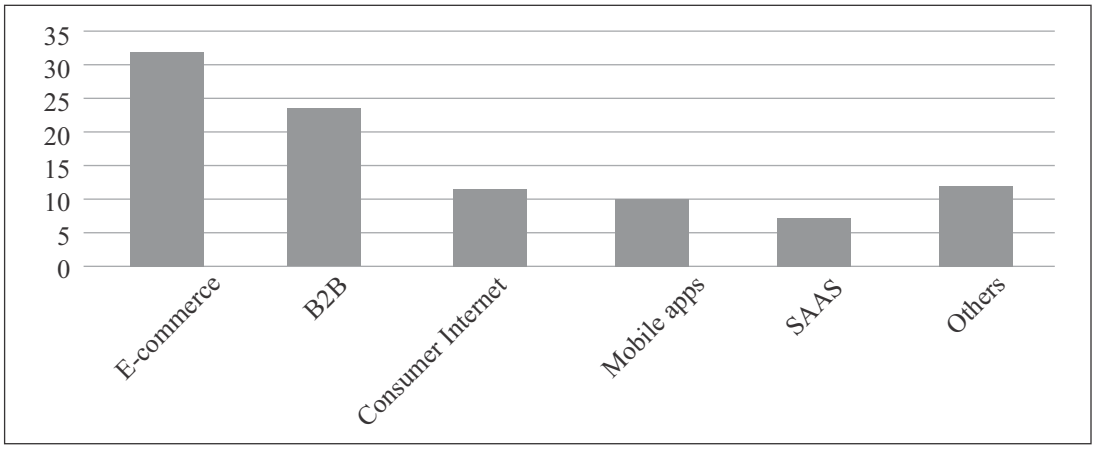
Figure 3:

Marketing: In marketing the conventional roles will be supported with Digital Marketing Professionals handling Micro-Marketing roles, the Digital Communications Manager or Digital Planner, SEM Manager, PPC Manager, Digital Copywriters, Media Acquisition Manager and User Experience Designer

Web: The net paraphernalia in digitally-aided enterprise will quickly pave a way to the ever-growing necessities of Web Project manager, Web Designer, Webmaster, Web Integrator, Web Developer and Search Engine Optimization Manager

Steep Increase in Start-ups Supported with the Aid of ICT and E-commerce

In a drive to deliver consumer-centric solutions tech-based start-ups noticed a sudden upward curve in the course of this phase. It is absolutely obvious from the graph in Figure 4 that E-Commerce has the best quantity of tech-based start-ups in India over past two years, constituting round 33% of the overall tech-based start-ups, accompanied by B2B, Consumer Internet, Mobile apps, SAAS (Figure 4). Most of the E-Commerce businesses like Flipkart, Paytm etc. are very famous among the people of India and are pretty a success.



Source: Xeler8

Figure 4: ICT Aided Start-ups in India in 2020-2021

Sustainability via Cloud Computing Solutions, Collaboration and Cybersecurity

With the growing surge in tech-based models of enterprise, Cloud Solutions and Collaboration and Cybersecurity troubles followed. To deal with the new tech space in the dynamic IT sphere, all companies commenced in adopting Cloud Computing. Cloud computing has charted quite an outstanding consumer growth path in the last 12 months. Cloud creates a difference from conventional IT infrastructure through increased saving of time and empowering the user with fast availability and accessibility and complete automation. Even minor businesses are migrating to cloud platforms for getting a secure data and application storage while retaining the operational expenses as little as possible. The cloud computing market is predicted to rise to almost USD 832 billion by 2025 from around USD 264 billion in 2019. According to IBM, *the worldwide average cost of a data breach is about USD 4 billion and is scaling in an upward direction. As data is one of the most valuable assets, this validates the motive why agencies must invest in preventive data protection and security measures.*

Cybercrime damages will incur a global cost of USD 6 trillion annually by 2021 says Cybersecurity Ventures. Cybersecurity Ventures expects *global cybercrime expenses to grow by 15 percentage every year over the following 5 years, reaching USD10 trillion annually by 2025, up from USD 3 trillion in 2015.* According to The Wall Street Journal, each American citizen must *expect that all of their data (personally identifiable information) has been stolen and is on the dark internet — part of the deep web — that's deliberately hidden and used to hide and promote heinous activities. Some estimates placed the scale of the deep web (which isn't always indexed or available by search engines) at as much as 5,000 times larger than the surface web, and increasing at a pace that defies quantification*.

Research Gaps

As discussed and presented in literature review section, there's a scarcity of available literature in terms of adoption to digitization in several industry verticals that leverage advanced technology and the volume to which this transformation might be cost-effectively viable and cost beneficial for corporations that don't need virtual transformation in their core operation of business. During pandemic there's a gap to fill in the online demands of consumers and clients, accordingly there's a need to investigate whether this transformation is there to stay. A substantial survey of literature exhibits the gap that there's a paucity of discussion on the ways to enhance new ways of business in numerous verticals.

Research Objectives

This research is carried out to fill in the gap of limited studies in terms of digitization wherein its adoption in business is more prevalent at the onset of ongoing pandemic. This study additionally analyzes the changing traits in job roles rising out of the quick digitization of corporation and to comprehend if this transformation in diverse verticals is there to stay. This research additionally discusses the benefits of digital transformation of enterprise and discuss its flip side too.

Research Methodology

This research is based on already-existing data or the literature survey on the topic concerned. Data collated from existing sources of research has been utilized to bring overall effectiveness to the discussion of the topic and its analyses. Thus, secondary statistics has been used for studies which has been collected from sources like journals, research papers, review articles, e-books, case books, periodicals etc.

Analysis and Discussion

Acceleration in digitization system of business as an impact of the Covid-19 pandemic has introduced in approximately numerous years of change in the manner businesses in all sectors in diverse regions do business in just about a year's time. The present-day degree of virtual adoption by corporates has an outstanding revelation as compared to the pre-crisis pace of change had it continued.

Impact of Digitization in Business Verticals

The available literature and statistics report that in industry verticals related to healthcare and pharmaceuticals has undergone noticeable growth in digital-product portfolio compared to other sectors. During the process of digitization, a majority of the sectors have not added substantially to their product enhancement and product diversification apart from the sectors mentioned above.

For instance, adoption of digitization, for example

in the sector of telehealth had a humongous rise. Automated 'Chatbots' could make initial diagnoses on the basis of symptoms reported by patients.

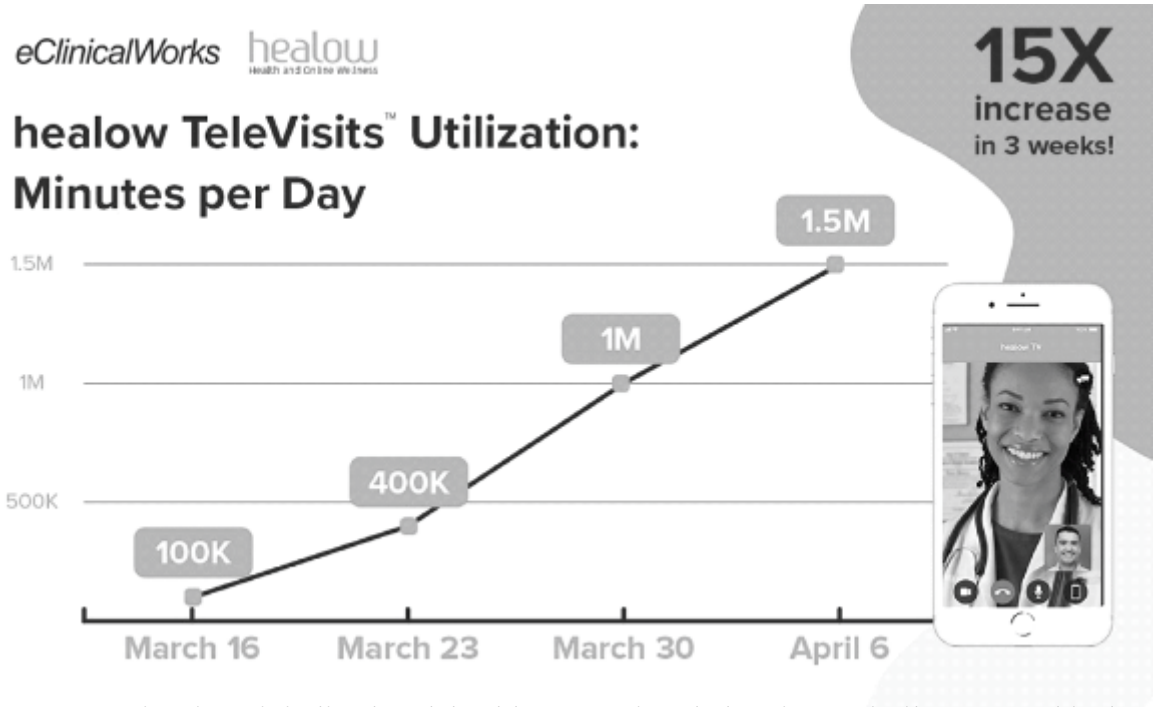


Figure 5: Steep Rise in Digitalized Telehealth During the Covid-19 Pandemic

Automation in Supply Chain Control and Blockchain

In a manner to enhance domestic grown products and employment, much reflective of India's approach "Atmanirbhar Bharat" (translated to "self-reliance and self-sufficient India"), it needs to be realized that certain products depend on sophisticated materials and include crucial components just like the precision castings and high-density circuit-boards, that need specialised technical skill-set to manufacture the products. This requires recognizing the niche and the vulnerabilities as producers of home-grown products. There is likewise a need to encompass maintaining of 'safety stock' and to diversify and widen the supply base. Strategy shifts as an example as "China Plus One" strategy that devises China and another South-Asian nation as one of the suppliers also faces a flip side. Banking on to nations belonging to similar geographical zones, as in a similar continent, makes it vulnerable to region-based crisis like the Asian Economic Crisis of 1997. So, the focus for Supply chain management has now shifted to be self-sufficient within a nation and minimising dependency on foreign countries as much as it's feasible.

Corporate Experimentation in Modified Business Models

However, an undisputed imperative to spurred shifts in changing business models apart from talent and innovativeness, has been an organization culture that supported experimentation and acted early. The use of cutting-edge technology and well-timed decisions to reallocate resources to fund new initiatives has been part of corporate experimentation. There have been key measurable improvements recorded with a paradigm shift to digitalization for a strategic business mix. This has become a survival feat to a majority of the sectors of the economy.

Digitization of Workforce

Hiring is on the rise because of a new vacuum created in the digitally trained technologically skilled workforce to deal with this rapid automation and digitalization of businesses. There is an increasing need of trained employees who are digitally skilled to fill in the rising demand of employees in fields of virtual marketing, content material developers, on-line education, mental health, web developers and user-interface designer jobs together with all user-experience jobs. While the employees had to shift their profiles to IT-enabled ones, likely, the organization leaders had to upgrade their employees making them trained to suit corporate demand of digitization.

Survival Strategies for Start-ups

According to NASSCOM nearly 70 percentage of start-ups have been impacted in the course of 2020-2021. This challenging time requires start-ups to be the leader of productivity enhancement and emerge as the analytic centres of excellence.

While nearing one third of B2B organizations report that the fear of client resistance to change became a dilemma to digital transformation, therein one-fourth B2C business reports that the IT infrastructure was not that reliable or the organizational silos impeded commitment to execute virtual transformation and enforce vital changes. Some even suppose that digitization was not a priority and so was lagging in leveraging its potential. However, those start-ups could manage to thrive those who adopted to digitization apart from those with ICT in their core operations.

Improved Cybersecurity along with Identity and Access Management (IAM)

Companies those have been technologically 'prepared' fared better in the pandemic. With effective transformation of business changes that encompass the adoption of virtualization and cloud technology using advanced analytics, cloud and cybersecurity, artificial intelligence (AI) and robotics. Rightly as Deloitte places it across, migrating of data to the cloud offers organizations the scale, flexibility and redundancy to preserve IT systems running effectively, even during vastly disruptive events like a pandemic. It helps reduce the costs of hardware, power, firmware upgrades and on-site support, because those come to be the responsibility of the cloud provider.

The question consequently rests on the fundamental shift on IT not only affecting its architecture model, however, its business model too with the fast diffusion of cloud computing paradigm. Modern Identity and Access Management (IAM) systems offer flexible authentication that allows people to work from home or anywhere else. IAM has come to be the foundation in the cutting-edge secure working environment.

Research Findings

Response of Industry Verticals on Product-portfolio during Digitization

One of the findings has been that there were exceptionally low levels of growth in the digital-product portfolios of automotive and in consumer-packaged goods (CPG). They report low ranges of change, whilst this digital product-portfolio transformation has been notably reported instead in sectors associated with pharmaceuticals and healthcare. This additionally includes the financial services and professional services, in which digital product-portfolio has expanded nearly to a double in contrast to business in CPG industry.

New Definition of Job Roles

A variety of new roles emerged with the growing trend of digitization of business. To be specific, research findings relate to an increasing demand for Data Analyst, AI Specialist, Cloud Engineer, Robotics Engineer, Cybersecurity Specialist and Full Stack Engineer. Apart from these profiles, the ones in demand are Frontline E-commerce workers, employees in Security and Network Architect apart from mounting need of trained employees in SEO (Search Engine Optimization) jobs.

Boost to Domestic Supply-Chain Management

Owing to disruptive global supplies, some factories were at the verge of closure. There is rising need to maintain a 'safety stock' owing to the problems surging due to America-China geo-political drift. The theory of 'China plus One' too has its own shortcomings. So, to boost domestic solutions to supply chain management there is a paradigm shift in the entire business process. Added to this fast-paced digitization has opened up various vistas like the blockchain which were less popular in pre-pandemic times.

Additive manufacturing in the form of 3D Printing is another approach to boost domestic supply chain management. 3D printing which can remarkably lessen the complex variety of steps required to make complicated metallic shapes also reduces the dependence on remote suppliers of machinery and tools so needed. To obtain the traditional economy of scales fast automation Robotic palletizers, automated quality check poses a welcome change.

Corporate Experimentation through Cutting-Edge Technology

Research findings state that the shifting model to technologies are playing a crucial role in the times of pandemic. Trends including digital payments, robotics, IoT had the cutting-edge technology to aid and support corporate experimentation during this challenging phase. Moreover, it was only through digitization and resort to technologies that economies gained resilience during the lockdown and quarantine phase. There are also reports on graduates in Japan being replaced by robots.

Rising need for Innovative Solutions for Start-ups and 3D Printing

Sustained excellence in managing and controlling costs for start-ups is of paramount importance. Often it has been cited that there are too many identical or similar products and services that start-ups need to devise innovative solutions to develop a niche. However, innovation and entrepreneurship are an age-old proven road map to success. Amongst other factors, lack of innovative competitive edge brings the start-ups at the edge of shutdown of business.

For instance, adoption to 3-d printing gives flexibility in manufacturing since the identical printer can produce unique products primarily based on unique layout files and materials, and easy components may be made onsite fast without requiring a prolonged procurement system and an extended wait for the shipment to arrive. Digitization has opened new vistas to the world of innovation.

Inclusive Access and spread of the Internet, Improved Stability in Power Supply

Another primary finding of the study emphasizes greater reliable power supplies to rural zones, suburbs and tier2 to tier3 cities. All the digitization process in business and adoption to technologies can only yield desirable results with the affordable availability of 5G internet in every corner of the world. The cognizance on renewable energy has incredible possibility to fill in the essential gap.

Also, it has been cited that there may be a growing demand for stability and accessibility in network connections because of increased use and wider spread of the internet as a consequence of the digitization of business.

Conclusion

A majority of the organizations are making these pandemic-led crisis related transformation to digitization keeping long time goals in mind. Those organisations that have been advanced in their collaboration technology are those that held the strongest position to continue with their steady business operations whilst the phases of lockdowns and quarantine, 'work from home' and social distancing became the 'new normal'. There is a growing requirement of skilled employees in diverse job roles that are associated to technological skills and few in fields of healthcare, pharmaceuticals or even mental health management.

In supply chain management even as the retail, CPG industry, logistics and manufacturing confronted most disruption, different industry verticals that don't directly deal with customer-delivery interface had redundant stocks. 'Export Bans', 'Quarantine Orders' and reliance on paper-based records brought supplies and manufacturing factories to a shocking halt. While the flexibility in management roles and overall corporate strategy have been benchmarks at some point of this crisis it is the technological adoption that proved success and have outrun their peer's market revenue share compared to the pre-pandemic times. The attitude of the corporate leaders who considered technological adoption to business to be a burden of extra expenditure definitely changed.

This pandemic-led crisis period has additionally witnessed a steep rise in start-ups and those start-ups pick up the momentum those were supported by ICT and E-commerce. There is no room of doubt that majorly those business thrived who took to the digital platform or additionally modified their business verticals to suit remote customers and WFH. However, lack of technological knowhow and digital business support bogged down the process of digitization for many.

Cloud migration is another such technological adoption that has been "new" to a cost-beneficial "normal" for times to come. A majority of the business verticals consider investments in data security and artificial intelligence to be beneficial in the long run. While Internet-of-Things, robotics and blockchain have also added resilience to business. Technology adoption has continually been a two-edged sword and digital disruption is not new. Substantially, it is quite early to conclude whether corporations expecting sizeable changes in areas of remote working and work from home, leading to increasing migration to the cloud are more than twice as likely to believe that these shifts will stay after the crisis than to count on a return to precrisis norms or not. However, the magnanimous transformation from conventional ways of business to its digital transition has been of historic proportions because of the pandemic.

Recommendations

For any transformation to take place in large scale and with a historical speed, business evaluates its cost effectiveness in the long run. For a whopping majority they expect physical footprints to decline and technical changes related to customer interaction and WFH to be continuing in future. While implementation of Blockchain, IoT and 3D Printing might open many bottlenecks to supply chain management disruptions. More research and their reviews shared on public forum, greater awareness on public media is recommended to bridge the existing gap.

The traditional hitches to make business digitalized has automatically changed given the benefits of taking business to a digital platform. This trend will lead as a mandate for business to survive and will become the 'new normal'. Thus, research recommendations lay down fast digitization to reap its benefits. Also, dependency on paper-based records and lack of flexibility had a negative impact in the supply chain management globally. Herein, cloud computing, Internet-of-Things (IoT) and blockchain can prevent future bottlenecks through global data sharing. Additionally, research findings suggest more reliance of business to 3D printing technology to alleviate 'export-ban' shocks and bring in ease and flexibility in production. Inclusive accessibility to internet can facilitate cloud computing, collaboration and all that enhances digitization of business verticals across all regions.

Limitations

We have just entered the second half of FY2021 and the pandemic continues to be looming on human life and business at large. The third wave of the pandemic is also anticipated whilst many major nations are under the second wave of the pandemic. Apart from this, the geo-political shifts of global power that determine many strategy formulations of business and impacts the economic changes are at new definitions. Thus, this is a time when transitions are at place and this topic on pace of digital transformation in various industry verticals, diverse sectors in several areas can be surveyed and studied in details. So, this area of research has substantial scope.

Scope for Future Research

The current topic holds huge scope of future research, given the challenging times of pandemic, both from mental health and physical concerns, transition and transformation of business from paper-based mode of working to paperless-mode and digitization, statistical surveys and their analysis is substantially missing. As BBC puts it, about 200 million people have lost their jobs during the pandemic and this historical changes in world employment and business ever need attention and timely human-centric solutions through discussions, analyses and reports studying current trends. So, there is a vast scope of study and research and detailed surveys, their analyses and also more of literature and substantial experiences and observation shared on this topic of study serves a robust scope for future research.

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