

Report On
**Technology Usage Pattern During Covid-19 Pandemic in
Technuf LLC**

By

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An internship report submitted to the BRAC Business School in partial fulfillment of the requirements for the degree of Master of Business Administration

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Brac University
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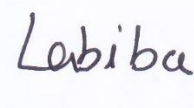
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Declaration

It is hereby declared that.

1. The internship report submitted is my original work while completing my degree at Brac University.
2. The report does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The report does not contain material that has been accepted or submitted, for any other degree or diploma at a university or other institution.
4. I have acknowledged all the main sources of help.

Student's Full Name and Signature:



Fabliha Tasneem Labiba
18264012

Supervisor's Full Name and Signature:



Dr. M. Nazmul Amin Majumdar
Professor (Adjunct)
BRAC Business School

Letter of Transmittal

Dr. M. Nazmul Amin Majumdar
Professor (Adjunct)
BRAC Business School
BRAC University
66 Mohakhali, Dhaka-1212

Subject: Submission of internship report on ‘Technology usage pattern during Covid-19 pandemic in Technuf LLC’.

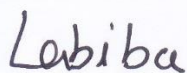
Dear Sir,

This is my pleasure to present a report on 'Technology usage pattern during Covid-19 pandemic in Technuf LLC'. This report is prepared with the help of my organization Technuf LLC.

I have attempted my best to finish the report with the essential data and recommended proposition in a significant compact and comprehensive manner as possible.

I believe, the report will meet the requirements for the degree of Master of Business Administration.

Sincerely yours,



Fabliha Tasneem Labiba
18264012
BRAC Business School
BRAC University
January 25, 2021

Non-Disclosure Agreement

This agreement is made and entered into by and between Technuf LLC and the undersigned student at BRAC University Student: Fabliha Tasneem Labiba, ID: 18264012.

- The collected data from the survey respondent must be kept private and can only be shared for academic purposes.
- Confidential information such as the names of the top management employees and their designations cannot be used for any random purposes.
- The information used to prepare this research report is not shareable in any public domain.
- Technuf LLC understands that this report is a requirement for completion of MBA degree of the BRAC University student: Fabliha Tasneem Labiba; ID:18264012. Hence, permits her to use company information for academic purposes only.

Executive Summary

This research report is prepared to find out “**Technology usage pattern during Covid-19 pandemic in Technuf LLC**”. The study shows us how technology got a boom during the pandemic due to the changed usage pattern. Many people who never used technology before are now forced to use technology to fulfill their daily tasks. The research found out that COVID 19 impacted the software and digital marketing sector the most. The demand for software solutions increased and the digital marketers got a new segment of customers due to the change in usage pattern. The usage of software mostly increased in the education and corporate sector due to work from home and online classes. In the last section of this research report, there are few recommendations for businesses to cope up with the changed technology usage pattern of the consumers. The researcher suggests that companies should focus more on building a framework for virtual offices, should hire an energetic workforce and train the existing employees, and lastly, the businesses must make sure that they are reachable via an online or digital medium.

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List of Acronyms

IT	Information Technology
OM	Operations Management
IS	Information Systems
MS	Microsoft
R&D	Research and Development
BPO	Business Process Outsourcing

Chapter 1

Overview of Internship

1.1 Student Information

I am Fabliha Tasneem Labiba, a student of BRAC Business School (BBS). I am pursuing a Master of Business Administration (MBA) bearing the student ID: 18264012. My area of specialization is Marketing.

1.2 Internship Information

1.2.1 Period, Company Name, Department & Address

I am currently working as an Associate Business Development Specialist at Technuf LLC. This is a full-time role, effective from February 1, 2018. My department is Business Development and proposal operations. Our office is at 95, Mohakhali, Khawaja Tower, Dhaka 1212.

1.2.2 Internship Company Supervisor's Information

Currently, I report to my President, Mr. Faisal Quader. Usually, I report to my team lead Ms. Ichrak and proposal operations and compliance team lead Mr. Burse.

1.2.3 Job Scope

Over these years of employment in Technuf LLC, I have done a various amount of work ranging from small to big tasks and projects or activities. My key tasks include attending strategy meetings, preparing marketing material, helping the team with different proposal initiatives, and few other miscellaneous tasks. My job functions are as follows:

- Look for potential opportunities across portals, studying requests for proposals (RFPs), and attending weekly strategy meetings.
- Preparing marketing material and related presentations including graphics and templates.
- Developing proposals according to the requirements and formats using past performances of the company.
- Preparing project overviews for identified potential opportunities.
- Maintaining an internal pipeline of potential opportunities.
- Obtaining approvals by reviewing the proposal with key people such as proposal team lead, project managers, etc.
- Researching across agencies for future business scopes and partnering opportunities.

1.2 Job Outcomes

1.3.1 Contribution to the company

I joined this organization to apply my academic knowledge to the real business world. As a fresh graduate, I was assigned to do the basic tasks at the very beginning of my career here so that I can learn on the job, apply my skills appropriately and explore various functions within the business development team. My tasks mostly focus on proposal activities. Below are some snapshot of my tasks:

Creating and updating Templates: My major assigned task was to create proposal templates for the proposal writers using MS Word. At first, I was given RFPs' to read through to understand the requirements of the proposal.

Creating a new template comprises things like creating a cover page, writing cover letters, setting header and footer, professional font size, and styles that are preset/embedded into the document. This was a continuous process because I need to update the template according to the writer's requirement until the submission of the proposal document.

Creating Diagrams and slides: Another major task was to create diagrams and graphics that are required for the relevant proposal writeup. I used MS PowerPoint to draw those diagrams.

Sourcing new opportunities: Another key task was to source new potential opportunities for the company using the given criterion.

Updating files and sheets: I regularly updated files such as Sponsor/suppliers/contracts/offers, Timeline sheets, working schedule sheets, promotional information letters, sponsor letters, and contracts, etc.

1.3.2 Benefits

The first job always teaches us a lot of new things. Hence, there are few important skills I developed while working for Technuf LLC. Those are mentioned below:

- Most of my task was to prepare marketing materials using different applications such as MS office. That is how I have achieved technical skills in software and applications. I learned the functions of Microsoft office such as Word, PowerPoint, and Excel I became technically sound. I also used Visio for some projects.

- As a new member of their writing/marketing team, I was given access to internal mailing and database. Besides, I had to do some daily routine tasks. These routine tasks helped creating a sense of responsibility in me and deal with the on the job challenges that were on their way.
- Just the act of maintaining a work routine and submitting my assignments to my supervisor on time made me punctual and helped me utilize my time more effectively and efficiently both in my career and personal life.
- During my initial days at Technuf, I faced many problems that had to be solved with effectiveness and efficiency. For example, a large amount of information to analyze (while highlighting within the RPF). This data analysis phase boosted my analytical skills.
- Since the company mainly operated from the USA, the only option to communicate with my supervisor and other staff members was through Email, Skype, Teams. This taught me to adjust myself to different time zone. As English is the only language I was supposed to use, this increased my communication skill as well. Moreover, working in an American company allowed me to enrich my knowledge about their country, their work culture, process and styles, their business formula, etc. I also noticed how challenging it is for private companies to win a contract offer provided by USA government agencies. I have learned the concept of Cyber Security. And last but not the least, I could identify the differences between academic learning and experimental learning. Those are highlighted below:
 - The real business world is tougher than theories from a book. Skills are crucial to surviving here.
 - The curriculums taught in business schools have failed to shape up the right skill set that is required to survive in the real world. I believe schools focus more on theories whereas practical knowledge and skills are more essential to survive in the real world.
 - In university, we had a ready-made social life of peers who had similar interests as you. It was easy to find time to hang out and socialize, even after having a hectic academic schedule but the moment we join job life, we find our social life to be a little different. Here, we must deal with people from different backgrounds and ages, and upbringings.
 - In the workplace, responsibility matters a lot. Be on time, paying attention to instructions, and being accountable for our job are all important aspects of responsibility.

1.3.3 Problems/ Difficulties during job

My first job helped me to go through the transition period from student life to professional life. Often this transition is not that easy. So, I encountered several difficulties as well.

Firstly, I was equipped to deal with every task that I was assigned to do. However, it was specific industry knowledge and terms that I was unfamiliar with that caused difficulties at the beginning of my job. Dealing with RFPs and while highlighting those, there is a lot of jargon that is impossible to know beforehand unless you have worked in a professional capacity before. Luckily, my co-worker, Karishma helped me to solve that since she did this before. Later, I also got proper guidance and help from my supervisor.

Secondly, a cultural shock is another issue I faced. Coping with a new environment and colleagues was not easy. Besides, it was my first professional field where I had to maintain formality and the chain of command very strictly.

Thirdly, communication was a big challenge. As my supervisor was from a different region and a different culture, it was not easy communicating with her at the beginning culture is not easy because I had to be very careful in choosing my words being a professional employee. But this problem did not last long because my supervisor herself made things easy and comfortable for me. However, communicating with them in urgent needs were difficult because of two reasons:

- (1) Because of the time zone difference between the USA and Bangladesh, I had to wait for the next 12 hours to get a response from my supervisor.
- (2) Since my supervisor was in the USA and I was in Bangladesh, I missed close supervision. I also could not get the solutions instantly in times of need because online communication can never be as effective as face-to-face communications or learning.

1.3.4 Recommendation for the company in terms of Future Internships

Technuf is a great company for interns. Technuf is a small company even though it carried out some big projects with both the USA and Bangladesh government. So far, they have hired a lot of interns from Bangladesh. They help their interns to improve and develop their skills. Few recommendations would be as follows:

- Keep hiring interns with different backgrounds within business disciplines so that they can explore business horizons and contribute more to the company.
- Giving empowerment and let them participate in decision making will help them to develop self-esteem.
- Treat them as an important contributor to the company's success rather than just part-time interns.
- Provide them with relevant tasks that will add up to their skillset.

- Make the internship a paid one or provide them with some other incentives.
- Provide them with proper training so that he/she can apply those skills in every aspect of their life in the future.

Chapter 2

Organizational Overview, Operations, and Strategic Audit

2.1 Introduction

The objective of this section from an organizational point of view is as follows:

- To know more about Technuf, Their people, their management & marketing practices.
- To know about Financial Performance and Practices regarding Operations Management and Information Systems.
- To analyze Technuf's SWOT matrix.

To achieve these objectives, I intend to follow the following methodology:

- To know more about Technuf, we would take resources publicly available on the Technuf website.
- To get data on and analyze the software industry I collected information through internal opinions of senior colleagues.

The scope of this research will be the extent to individual knowledge, yet the exclusion of confidential information for Technuf. Also, the scope allows us to know more about the organization and its internal practices regarding various business aspects.

Limitations of this report constitute a time of a few months is not ample enough to shed light on an organization properly. I did only survey 20 people who are my colleagues within Proposal Team, and there could be a broader perspective if there were more respondents.

2.2 Overview of the company

Technuf is a Maryland based company that provides leading-edge technologies with a core focus on customer success and engagements. They are fully committed to delivering the best value and quality that meets and exceeds customers' expectations in every way. Technuf offer knowledge sharing and skill transfers which provides complementary capabilities to their partners. Technuf has a bunch of highly skilled professionals who can dynamically engage in problem-solving and critical thinking to solve real business problems.

Why Technuf?

Technuf is committed to ensuring that their employees are motivated and have the right skills to do the job correctly. They pride themselves on attracting and keeping the very best the industry has to offer in information technology, application development, and program management support. They continuously improve their processes to provide the most cost-efficient and optimized solution to its customers. Their customer-centric approach has made them develop trusted relationships and organically grow within each one of their projects over time.

Vision and Mission: Their vision is to become a market-leading and professionally recognized provider of IT related products and services as part of a comprehensive solution. On the contrary Technuf's mission is to enable the following:

- “Customer Success”.
- “To deliver a cost-effective and optimized solution.
- “Empowerment of employees”.
- “Social responsibility.”

Core Values: Technuf's core value is to ensure that customer success is built upon making every single employee successful with continuous training and mentoring to ensure that they can provide technical excellence in every single engagement. Customer and Employee success are inextricably linked. They attract the very best the industry has to offer in system engineering, software development, and management. Their core measurement for employees is their ability to make customers successful. They encourage all employees to maintain a sustainable balance between their work and personal lives. They are here for the long term and want to ensure that their employees can provide continuity of their service. (Technuf, n.d)

Key Services:

- **Cyber Security:** Technuf's cybersecurity services include areas such as Physical security to include Identity Access Management and Role-Based Access Control, Intrusion Prevention, Detection and Mitigation, Data Loss Prevention, Incidence Response, Forensic, eDiscovery, and Litigation.
- **Software Development:** This includes but is not limited to Big Data analytics, Business Intelligence, Business, and Requirement Analysis.

These are the two strongest capabilities of Technuf. Apart from these, they also provide training, infrastructure support, and management and governance-related services.

2.2.1 Key People

- Faisal Quader, President
- Shah Ahmed: Chief Executive Officer
- Anwar Sadat: HR Lead
- Bruce Scott: Vice President Proposal Operations and Compliance
- Ichrak Dahou: Proposal Team Lead

2.3 Management Practices

Our leaders and executives bring many years of industry experience in implanted systems engineering, application development, business intelligence, SDLC and tool automation, and project management. This experience has allowed us to gather best practices from industry leaders and create a unique blend of a cost-efficient set of processes for the customers' benefit. Both practical experience and best practices have helped Technuf to regularly meet and exceed customer expectations. Also, their in-depth and vast experiences have helped them to innovate processes to deliver unique, optimized, and creative solutions for the customer that meet the time, materials, and budget constraints.

2.4 Marketing Practices

Technuf believes in providing superior customer service hence, their marketing practices reflect customer reach, awareness. To be able to reach the maximum number of clients, Technuf has social media presence across social media platforms like Facebook, LinkedIn, Twitter, Instagram. Recently, their goal is to work on the branding of the company, as a result, they are revisiting their marketing and branding strategies which are currently in the initial phase.

2.5 Financial Performance and Accounting Practices

Technuf maintains United States-based accounting standards because they are a U.S based company. They must abide by the local regulations. Their financial performance data could not be disclosed in this report because of confidentiality and privacy concerns.

2.6 Operations Management and Information System Practices

Technuf has the following practices in terms of OM and IS practices:

- Identification of distinct business processes and functions resulting from business breakdown.
- Leverage the common business processes according to the best practices.
- Inclusion of Metadata repository for business services for decision-makers to select business processes to analyze and optimize.
- Establish a proactive methodology encouraging the identification of processes, conversion to services, and cataloging into Metadata for optimization needs modeling.
- Calculate the performance measures with the stakeholders and related parties.
- Build a security framework and components that support process optimization for Information security purposes.

2.7 Industry and Competitive Analysis

SWOT Analysis

Strengths:

Technuf has the following strengths:

A diverse workforce: As Technuf hire offshore employees, they can gather talented people from anywhere. As a result, they already have talented minds from India, Bangladesh, Australia, and Canada.

International clients: Technuf has clients from Saudi Arabia, India, Japan, and some other countries that make their portfolio stronger as a company.

Experienced business partners: Technuf has partnered up with many big companies on numerous projects. They have served as a sub-contractor to many successful contracts which gave them a boost to their experience.

Collaborative attitude: Technuf believes in learning through collaboration and knowledge sharing. This is one of their biggest strengths because this attitude helps them to grow as an effective workforce and learn from their business partners.

A strong performance evaluation system: Technuf appreciates their employees who perform well and helps the employees who need training and motivation to bring better results for the company. Hence, they have a strong performance evaluation system through which they can easily identify overperforming and underperforming employees and help them accordingly.

Weaknesses:

Complicated business: Their business model is complicated in the sense that the business development team often lacks knowledge about the offered services.

Lack of self-branding: Over the years Technuf did so many successful projects but never thought of branding themselves as a big threat to the existing competitors.

Opportunities

Technological shift: COVID 19 pandemic has caused a huge shift in technology. As a software company, it is high time to analyze the new software demands and work accordingly to gain more customers.

Support from local government: Technuf is mostly involved in projects with the local government agencies in the United States. Hence, they get enough support from the local government. This is an opportunity for them to enrich their portfolio and establish themselves in the industry.

Growth potential: The technological shift due to COVID 19 pandemic will allow Technuf to grow because of the increasing demand for software-based solutions.

The opportunity for cost minimization: The fact that companies are adopting work from home culture and heading towards outsourcing, is a great opportunity for firms like Technuf to minimize their business operations cost.

Threats

American business policy: As Technuf is a United States-based company, it follows the local business policies which might be a threat to their global expansion.

Lack of public awareness: As Technuf did not brand themselves properly, they could not make the public aware of their presence. This might be a threat considering there are changing demands in the software industry.

Competitor analysis for Technuf is not relevant in the context of the report because it is a U.S based company. Also, it is difficult to gather data from the U.S competition within such a short time. Hence, no other detailed analysis could be provided in this section.

2.8 Summary and Conclusion

To summarize this section, Technuf as a company is doing quite well but still has room for improvements as their SWOT analysis suggests. They need to work on their weaknesses to reduce

the threats and use their strengths to utilize their opportunities. COVID 19 has created a technological shift that Technuf must take advantage of.

2.9 Recommendations

After analyzing Technuf's SWOT matrix. I would like to recommend them the following steps:

- Work on their opportunities and threats using their strengths to cope up with the changing technological demand.
- Hire more interns to utilize talented graduates across the globe so that they can contribute to the organization's success through their efficiency and productivity.
- Go for more partnerships with similar businesses to strengthen Technuf's portfolio. Thus, it will allow Technuf to learn more about the good practices of the other similar businesses within the industry.
- Set up local regional offices if they want to expand their businesses. If they have local offices in the countries they expand, it will help them to capture the local market as well.
- Create a brand plan to brand the company intensively. Post-COVID 19, the digital presence of any organization becomes vital. Hence, my suggestion for Technuf would be to establish proper branding strategies to make Technuf a recognizable brand in the software industry.

After analyzing Technuf's SWOT matrix, I firmly believe that the above-mentioned recommendations will be beneficial to the company.

Chapter 3

Technology Usage Pattern During COVID-19 Pandemic

3.1 Introduction (Background and objectives)

COVID 19 pandemic has shaken the world in every possible aspect and probably it has impacted the technology sector the most. IT is a huge industry itself. Within the IT industry, some sectors got a huge boost, and some remained unaffected. In this section, we will try to find out the significant changes due to COVID 19 within the industry, the broader impact of the changes. The two core components that we will be looking at 1) Software Industry, 2) Digital Marketing. The study will have three specific objectives:

1. To identify the existing IT industry scenario of Bangladesh compared to the developed countries. (Pre-COVID)
2. To identify the impact of COVID 19 in the overall software/IT industry.
3. To identify the impact of COVID 19 on digital marketing practices.

3.2 Literature Review

To satisfy the first objective of our research, we will be looking at the IT industry of Bangladesh before COVID 19 pandemic arrived.

According to (Helal and Mahjabeen, The Daily Star, 2020). IT gives quick and easy access to information which is essential for the growth of any nation. Large IT companies are expanding around the world. Asian countries are also becoming stakeholders in this technological boom by creating a suitable environment for the big tech giants to invest in their countries. Existing top giants like Microsoft, Apple, Samsung, etc. are making huge investments in Asian countries to utilize the cost advantage. Bangladesh, with its huge under-utilized and cheaper manpower, can also benefit from such initiatives if we can create an established foreign investment platform with a skilled workforce. Though we made remarkable achievements in the IT sector, still we have a long way to go compared to global competition. To fully utilize the opportunities offered by the technology expansion, we must encourage our entrepreneurs to start IT companies that reflect innovation and utilization. Thus, a lot of IT jobs can be created in the market. The success of the RMG sector can be recreated in the IT sector as well.

On the contrary, emerging Asian countries like India, China, Malaysia, etc. have decided to go for digitization to utilize the opportunities offered by the expansion and learn from technologically

advanced countries. Hence, these countries have heavily invested in IT sectors, earning considerable benefits in higher profits and growth. For example, we can look at the rapid growth of the IT sector in Malaysia, which is fully supported by their government. It has created 800 new IT companies, more than 98,000 new jobs, also 200 foreign companies have set up their regional offices in Malaysia. Furthermore, Indian IT industry growth was driven by huge foreign investment. It is estimated that the outsourcing sector has a worldwide market of USD 500 billion; India's share is USD 140 billion whereas Bangladesh has only 700 million shares in the market. As the mobile phone industry in Bangladesh is doing good, IT-related things like BPO, development of other businesses and industries through automation of the business process can lower the cost which will increase productivity and profitability. A government promoted private-public partnership foundation can be made to promote investment in IT and finance the entrepreneurs. ((Helal and Mahjabeen, The Daily Star, 2020).

Moreover, the public and private sector plan to advertise IT careers to the youth and encourage entrepreneurship by providing start-up loans to the IT companies. The Bangladesh government is working on framing policies to encourage infrastructure developments in ICT. This summary sheds light on the current position of Bangladesh compared to the developed countries. (Helal and Mahjabeen, The Daily Star, 2020).

Next, we will look at the existing literature that supports the second objective of the research which is the impact of COVID 19 in the IT/software industry.

According to the Market Data Forecast (2020), the IT industry has become a bit weaker due to a fall in the overall economy. A lot of companies have made their employees work remotely due to public health concerns. Hence, there is a massive opportunity loss for many companies that have international dealers. For example, Apple Inc. is estimated to have at least a 10% fall in its shares because of the unavailability of iPhones in the market. As the parts that are required to build the iPhones are supposed to come from China and it was totally off due lockdown for the past year. Coronavirus has canceled a lot of tech conferences which may have ended in fruitful partnerships for many companies. Also, a few of the meetings were changed to teleconferences but these will not have the same reach as they would have if those were face to face conversations. Quite a few network opportunities also went out of reach due to the virus. Due to the cancellation of these major tech conferences, the estimated loss is US \$1 Billion.

According to Business Insider (March 18, 2020), Corona Virus has impacted the tech industry in five ways:

- One of the biggest impacts COVID had on the tech industry is on the supply chain. It has disrupted the supply chain.
- The spread of COVID caused several of the most important tech conferences to be canceled which caused a lot of missed partnership opportunities.
- The growing need for remote interactions during the coronavirus pandemic has created a need for 5G technology which is faster technology for the long term.
- The coronavirus has shown possible use for virtual reality (VR) in enterprises, boosting the overall technology.
- COVID 19 has opened the door for futuristic solutions like smart cities where we can trace the public and their activities using technologies that will allow us to track viruses or other severe issues.

According to Fred Kosnac (2020), there are two more key impacts of COVID on the IT sector, which are stock market challenges and disruptions for struggling businesses due to lack of funds.

According to Rashik Alam, (2020) Both foreign and local firms are the clients of these software companies. Among them, 43% of the firms serve both local and foreign clients, whereas 48% operate in the local market and the rest 9% have exclusively foreign clients. Most of the foreign clients are North American and European firms, whose geographic locations are the most at risk due to the outbreak. However, regardless of the nature of the clientele, the entire industry is likely to be impacted by the ongoing crisis.

According to Nagar, T. (2020) Due to the local government's efforts to saving the population from COVID 19, the IT industry is taking advanced measures for coping with the challenges in web application development. Also, the hardware brands are facing a delay in shipping the products whereas streaming, gaming and online content platform services like Netflix have witnessed an increasing demand, Hence, there is a mixed effect on the overall software industry.

The **third objective** of the study is to find out the overall impact of COVID 19 on digital marketing practices. According to Britten, (2020), The process towards digitization got a huge boost because of COVID 19. Online firms enjoyed benefits due to people being at home and ordering online. Online contact has become like a lifeline in terms of everything from daily essential needs to luxury products. To be able to use this new process, people had to change their habits or adopt the process of using online tools. The more people spending time at home, the more opportunities create for digital marketers to reach the mass people.

According to (Deloitte, 2020) in terms of software usage and demand, Companies with remote-working technologies are already seeing increased demand as businesses increase their remote-working capabilities. Secondly, Security software will see third-order benefits from a growing remote workforce. The spending on security software will increase, particularly cloud-based tools, log management, and VPNs. In the software industry, demand for cloud infrastructure and specialized software will be on the rise. Deloitte also believes that demand for communication equipment and software will increase because most of the organizations are insisting their employees work from home and school and other educational institutions shifted their activities online. Besides, Faster connectivity (5G), cybersecurity, cloud services will be in high demand due to the pandemic.

3.3 Methodology

The main objective of this research is to find out the changes in technology usage patterns during COVID 19 pandemic. To conduct this research, I used qualitative data As a primary source of data, I have surveyed 20 people to find out the changes in the software industry and digital marketing practices and compare it with my found literature in the previous section. The respondents of my survey are from the business development department of Technuf. The survey questionnaire consists of 10 questions including both open-ended and closed-ended questions.

On the contrary, as a secondary data source, I have used existing journals, articles, blogs to find out what the existing literature has to say about the changes in technology usage patterns during a pandemic. While collecting secondary data, I focused on software and digital marketing.

3.4 Findings and Analysis

This section is to analyzes the key findings from the survey results and compares them with the existing literature to find out how the IT industry used to be before COVID 19 pandemic hit and how it is doing now post COVID 19. Also, the findings will indicate the prospects of the software industry and digital marketing in the long run.

	No. of Respondents choosing each option			
	<1 year	1-3 years	4-10 years	>10 years
How long have you been in the IT/software industry?	2	7	5	6

	Massive impact	Moderate impact	Impacted specific sectors	No significant impact
What is your opinion on COVID 19 affecting the industry?	6	7	5	2
	Software-based solution	E-commerce	Digital Marketing	Other
Which sector do you think have the most impact within the IT industry?	6	8	3	3
	Conferencing tools like zoom, Teams, etc.	Digital marketing/ software	Online entertainment platforms like Netflix	Automation
What software do you think got a boom due to pandemic?	7	5	6	2
	Most of them adopted new technology with ease.	There were significant troubles in adopting this change	New customer segment for the IT industry have emerged.	People are more onto the online purchase.
What changes did you see in the customer's usage pattern due to COVID?	3	6	5	6

	Yes, surely	Through these changes, a new era of technology will emerge.	The changed usage pattern will form a new consumer market.	New usage patterns will encourage innovation in terms of technology.
Do you think these changes are here to stay?	7	7	3	3
	Smart technologies	Online learning platforms	E-health	E-Cloud
What are the possible set of the software will be in demand in the coming future?	5	6	4	5
	E-recruitment	Project-based short term recruitment	Adopting offshore employee concept	Cost minimization
What are the changes in technology usage do you see within your organization?	5	4	7	4

	Yes, as people are staying at home and doing things digitally more than ever.	It has given the digital marketers an option to redefine their strategies to acquire more customers	Even if COVID goes away, the digital way of getting things done is going to stay forever.	(This was an open-ended question)
Do you think COVID has created new opportunities for digital marketers?	9	7	4	
	Redefine business strategies	Look for partnerships and exchange of capabilities within similar firms	Understand the importance of online presence despite not being in the marketing and related industries.	Focus more on R&D

What are the policies that firms like Technuf to battle this COVID impact and keep doing well?	5	4	6	5
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The tables above show how many respondents chose which option. As we can see, 2 respondents have been working for Technuf for a little less than a year whereas 12 people have experiences ranging from 1 to 10 years. Lastly, 6 people are vastly experienced in the software industry with more than 10 years of experience.

Below is the comparison between the findings from the survey responses and existing literature:

Question 2: 18 out of 20 respondents believe that COVID has a massive to moderate impact on the technology industry. The existing literature also suggested that the COVID 19 pandemic will have a massive impact on the IT industry.

Question 3: Most of the respondents (17) said that within the IT industry, Software-based solutions, E-commerce, and digital marketing got the most impact due to COVID. Previously, usage of technology was not that massive as it has become now. Post-COVID 19, people developed a new habit of using technology, online platforms, and software-based solutions to communicate.

Question 4: Most of the respondents (17) believe that online communication tools such as Zoom, Teams, and other digital marketing tools have got the most exposure besides online entertainment platforms like Netflix. Pre COVID scenario was different as the literature suggests. Before COVID, people did not know much about software like Teams, Zoom and their most used entertainment medium was either television or YouTube.

Question 5: In replies to this question, respondents said that people had struggled to cope up with this 24/7 technology dependency which was never the case before in their lives. Before COVID 19 arrived, businesses did not focus on digital presence but after COVID 19 pandemic, businesses are forced to shift to online platforms because most consumers preferred online purchase, sitting at home. This emerged a new customer segment for the businesses as well.

Question 6: Respondents stated that the changed usage pattern of technology will pave the way for innovation, creativity because there will be a new segment of the consumer market to target. Before COVID 19, the software-based solutions, availability of online platforms were not as vital

as it has become. COVID 19 has made a change in the technological usage pattern a lot quicker than it would have been otherwise.

Question 7: In terms of software demands, we found out that smart technology-based solutions, E-health, online learning platforms will be high in demand. Also, due to work from home culture, the cloud storage business with getting greater exposure. Pre-COVID the work from home culture was not there. As a result, smart technology, E-commerce, and software solutions were not that common.

Question 8: Organizations are getting more towards cost minimization, offshore recruitment, and short term project based recruitment, the survey found out. Before COVID, offshore recruitment was not commonly used. Organizations generally thought of reducing the number of employees in case of cost minimization.

Question 9: The survey shows us that the changed usage pattern of the consumer will create greater opportunities for digital marketers. Before COVID-19, digital marketing opportunities were less because the target consumers were niche, not everyone used to spend time online like they are doing now.

Question 10: Finally, the respondents of this survey believe that IT organizations must focus on partnerships, redefine their business strategy, ensure enough online presence and self-branding. Lastly, invest more in R&D in terms of process innovation in terms of efficiency and effectiveness. Before COVID 19, very few businesses cared about online presence, online stores but the pandemic has changed the way they approach things now.

The key finding of this research is that COVID 19 has changed the way people will be using technology post COVID. It has become a necessity rather than a luxury. This change is a blessing for the IT industry in a lot of ways, mostly because the demand for software solutions, E-commerce, and digital marketing has increased, and it is high time for the companies to utilize the emerging need of the consumers.

3.4.1 Strategic Plan for long term Sustainability

After conducting the survey, I asked my senior management of the company about their strategic plan post-COVID 19 pandemics in terms of mitigating the threats and long term sustainability. Though they did not reveal the exact strategic plan of the company, they have shared some key strategies that they plan to implement keeping the next five years in mind. Summary of that discussion are mentioned below:

The **first** thing they mentioned is that the company is working on being active across all digital platforms such as LinkedIn, Twitter, Facebook. They believe that it will help them reach more consumers effectively to mitigate the loss due to the cancelation of partnership opportunities due to COVID 19 pandemic.

Secondly, As COVID 19 pandemic is quickening software adoption in certain market segments such as education and virtual office space, Technuf is planning to utilize this opportunity by hiring new software engineers and train the existing ones to focus more on developing new software that can fulfill the changing needs of the market and contribute to the company's growth at the same time.

Third, Post COVID 19 pandemic, Technuf has exclusively focused on innovation. As a result, they are collaborating with the existing top tech leaders around the country to train Technuf employees in terms of business process innovation and future leadership goals and strategies. This initiative is called ICE (Innovation Center of Excellence) meetings that occur Friday weekly via Microsoft Teams.

Fourth, Technuf is planning to go for "acquisition" to mitigate the threats caused by COVID 19 pandemic. Thus, they will be able to add more capable staff to the company, increase their market share, reduce cost, and help the underperforming section of the company. In Technuf's case, the underperforming chunk of their business is Health Administration Support and HR Solutions. Hence, Technuf is planning to acquire a company named K4 Solutions Inc. who has been their partner in many projects and has a proven experience in the two sectors mentioned. The top management of Technuf is hopeful that the acquisition will be beneficial to both parties in terms of growth and sustainability.

Fifth, To address the new normal, Technuf has begun working on creating virtual office space to ensure seamless work-flow even if everyone is working from home. The business development team is constantly working on developing this new process, this is a long-term plan which is still a work in progress. This project is called "Technuf Virtual Office Hub" and it is coming alive in collaboration with Microsoft SharePoint.

These are the few strategies Technuf is collectively working on to become a sustainable organization in the changing business world due to COVID 19 pandemic.

3.5 Summary and Conclusion

This chapter extensively talks about the research topic which is Technology usage pattern during a pandemic. To support the research, I defined the objectives and methodology of the research, before that I conducted a literature review using articles that talks about this topic. I focused on two specific areas of IT and related industries. One is software and another one is digital marketing. Next, I analyzed the survey responses that I gathered from my department colleagues and found out that there is not much of a difference in terms of the existing literature and the thought process of the people in the organization.

Lastly, I discussed a brief strategic plan of my organization that they have undertaken to mitigate the loss due to COVID 19 pandemic, make use of the opportunities that came with it, and ensure long-term sustainability in terms of business perspective.

3.6 Recommendations

After conducting the research, I would like to recommend the following:

Focus on digital presence: Post COVID 19, it has become vital that businesses have an online presence. Otherwise, it will be very difficult to reach the target consumers effectively. Hence, My suggestion would be to analyze how more consumers can be reached effectively and efficiently.

Hire an energetic workforce and train the existing one: Companies must focus on hiring such a workforce who can take the challenges of the changing business need and serve accordingly. I would also like to suggest that Train the existing workforce acquire new skills that are required for the future.

Focus more on cloud-based/virtual solutions: COVID has shown us that, businesses can be conducted virtually. Companies must set a framework via which they can ensure that working from is as efficient as working at the office. My suggestion would be to create such a system where most of the job can be done virtually and thus it will minimize the costs of the businesses.

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Appendix A.

Survey Questionnaire

1. How long have you been in the Information Technology/Software industry?
 - <1 year
 - 1-3 years
 - 4-10 years
 - >10 years
2. What is your opinion on COVID 19 affecting the industry?
 - Massive impact
 - Moderate impact
 - Impacted specific sectors.
 - No significant impact
3. Which sector do you think have the most impact within the IT industry?
 - Software-based solution.
 - E-commerce
 - Digital Marketing
 - Other
4. What software do you think got a boom due to pandemic?
 - Conferencing tools like zoom, Teams, etc.
 - Digital marketing/ software
 - Online entertainment platforms like Netflix
 - Automation
5. What changes did you see in the customer's usage pattern due to COVID?
 - Most of them adopted new technology with ease.
 - There were significant troubles in adopting this change.
 - A new customer segment for the IT industry has emerged.
 - People are more onto the online purchase.
6. Do you think these changes are here to stay?
 - Yes, surely.
 - Through these changes, a new era of technology will emerge.
 - The changed usage pattern will form a new consumer market.
 - New usage patterns will encourage innovation in terms of technology.

7. What are the possible set of the software will be in demand in the coming future?
 - Smart technologies
 - Online learning platforms
 - E-health
 - E-Cloud
8. What are the changes in technology usage do you see within your organization?
 - E-recruitment
 - Project-based short term recruitment.
 - Adopting offshore employee concept
 - Cost minimization
9. Do you think COVID has created new opportunities for digital marketers? (**This was an open-ended question**)
10. What are the policies that firms like Technuf to battle this COVID impact and keep doing well?
 - Redefine business strategies.
 - Look for partnerships and exchange of capabilities within similar firms.
 - Understand the importance of online presence despite not being in the marketing and related industries.
 - Focus more on R&D.