

Journal of Economics and Business

Alam, S. M. Shahedul, Hasan, Ahmed Rizvan, and Borman, Tanmay. (2021), IT Freelancing in Bangladesh: Assessment of Present Status and Future Needs. In: *Journal of Economics and Business*, Vol.4, No.1, 33-56.

ISSN 2615-3726

DOI: 10.31014/aior.1992.04.01.320

The online version of this article can be found at:
<https://www.asianinstituteofresearch.org/>

Published by:
The Asian Institute of Research

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IT Freelancing in Bangladesh: Assessment of Present Status and Future Needs

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Abstract

The tremendous changes that business and economic activities worldwide have gone through in the last few decades, have opened new avenues for IT Freelancing to establish itself as the next big thing in business arena. Bangladesh, transitioning to more IT-centric businesses, holds a huge potential in this domain and has already emerged as a global freelancing hub under government patronage. The main objective of this study is to assess the present status and the future needs of IT Freelancing Business in Bangladesh. This study is of descriptive nature and based on primary and secondary data. Relevant statistical analyses were performed using SPSS. The study found that, 96.2% freelancers are below 35 years old and 80.8% have completed the tertiary education. Significant gender gap exists among the freelancers in terms of participation. It is found that 73.1% freelancers are working on a part-time basis and 33% want to be IT entrepreneur. Half of the freelancers have received training from government and private IT Institutes. Most of the freelancers are satisfied with the earnings from freelancing. Freelancers have observed lack of capital and IT infrastructure support, shortage of training facilities, payment-related issues and social barriers. In order to face the challenges of the fourth industrial revolution head on, the government should take initiatives for ensuring country branding, mobilization of funds, better internet connectivity and steady flow of foreign currency earnings from IT sector and thereby actualizing the ‘Digital Bangladesh’ agenda.

Keywords: IT, ICT, ITES, Freelancing, Digital Bangladesh

JEL: E24, J24, L86, L96, N85, O14, O25

1. Introduction

In 21st century the world has become tantamount to a big village closely knit by the web of connectivity, thanks to the blessings of Information and Communication Technology (ICT). Anything and everything around the globe

are now shared with the rest of the world. Science, innovation, politics, religion, culture, sports, education, business, and what not, all of these are observed by billions of people around the planet. This has brought about changes in the way people practice their day to day activities. ICT has opened new avenues for everyone. Business and economic activities have gone through tremendous changes in the last few decades as the paradigm has shifted to a more inclusive one than the past. Now, people from the most remote parts of the world can engage themselves in activities taking place thousands of miles away, across the ocean and continent. Thereby, comes the concept of 'Online Freelancing'. This concept emerged, not many years ago but has spread rapidly ever since. People with the necessary skill sets can now deliver products and services to individuals and organizations existing in the furthest places. Just like the traditional markets, online marketplaces have come into being to bring together the people in search of products and services and the people having the means to deliver the same. IT and ICT based freelancing thus have created a whole new area where lots of research and studies can be done. For some countries, this new area of economic activities has transpired itself to be a significant one that merits proper attention from the policymakers since lots of remittance and income are being generated by means of online freelancing. For Bangladesh, being a country that is transitioning to graduation from Least Developed Country (LDC) status, the IT freelancing sector can prove to be even more crucial from the economic point of view.

Even though in many other countries plenty of studies (Dubey et al., 2017; Gheorghe, 2015; McKeown, 2015; Yoganarasimhan, 2012) have been conducted to assess the scenario of IT-based freelancing sector, there is dearth of research in the Bangladeshi context. This study seeks to fill up that void and thereby paving way for the future research to be conducted in the field of IT-based freelancing.

In rest of this paper, section two through four outline respectively - the objectives of the study, the methodology applied, and some limitations faced. The literature review section starts with theoretical discussion on Information Technology (IT), Information and Communication Technology (ICT) and Information Technology Enabled Services (ITES), followed by the chronological development of IT, ICT and ITES in Bangladesh. An extensive literature review of the studies related to IT-based freelancing around the world is made after that. The next section i.e. section six, showcases present status of the IT freelancing in Bangladesh. Challenges faced in this new area of business are discussed in the follow-up section, whereas section eight sheds some light onto how to cope with various challenges. In the penultimate section, the future needs of the IT freelancing sector of the country have been outlined. Finally, a conclusive remark draws curtain on the study yet leaves some food for thought regarding future research endeavor into the area of IT freelancing.

2. Objectives of the Study

Since Bangladesh has been moving forward steadily in terms of economic growth over the last decade, exploring new areas of business can expedite such progress. IT and ICT based freelancing could be one of such areas where lot of potential is there for the country. Thus, the main objective of this study is to assess the present status and the future needs of IT Freelancing Business in Bangladesh which will help in formulating policies beneficial to the freelancing community.

3. Methodology of the Study

The study is descriptive in nature and based on both primary and secondary data. The population of the study consisted of all the freelancers of Bangladesh who started their freelancing business during the last three to seven years and continuing their business till now. The survey sample included the freelancers working from 6 out of 8 divisions across Bangladesh. The study developed a sample frame and used purposive sampling techniques to select the sample. The primary data for this study was collected by a self-structured questionnaire survey. The survey questionnaire was designed with some open and close ended questions some of which were previously used in similar research (Bose et al., 2013; Rahman & Rahman, 2017; Das et al., 2018). Besides these, some socio-demographic questions were incorporated here for the better understanding of the study impact. The questionnaire was pre-tested and edited. The study targeted 75 respondents for the survey, but it enabled to reach 63. Finally, the sample size of the study was determined 52 and the rest of the data were dropped in case of incompleteness. Secondary data was also collected from different published journals, book, websites and other relevant sources.

The data were analyzed using necessary statistical tools and techniques with the help of different statistical software packages. Data has been presented and interpreted keeping in mind the objectives of the study.

4. Limitation of the Study

If a greater sample size was taken, the survey result could have been more representative of the prevailing scenario. Moreover, only the individual freelancers were surveyed. Inclusion of institutional freelancers would have revealed some other important issues regarding IT freelancing. While conducting the study it was seen that there is an absence of a comprehensive national database on freelancing statistics e.g. freelancers' profiles, earnings, client information etc. Reluctance to provide information on the part of the respondents also posed a problem during the survey.

5. Literature Review

The literature review section has been segmented into three discussions. The first section presents a theoretical discussion on the issues of IT, ICT, ITES, Outsourcing, Freelancing and Online Marketplace. The following section seeks to present an elaborate discussion on the chronological development of IT and ICT in Bangladesh along with milestones and achievements for the country in the sector. The final section delves into a review of relevant literature in the field of IT and ICT based freelancing.

5.1 Theoretical Discussion on 'IT, ICT and ITES', 'Outsourcing', 'Freelancing', 'Online Marketplace'

5.1.1 IT/ICT/ITES

Information Technology (IT) is defined as the computing and communication technologies for solving real-life problems; it includes computing environments, general application software like visual presentation applications, word processing, tabular data manipulation, World Wide Web, Database Management System, e-mail management systems, virus, and spam protection. It also includes introduction to the basic computing hardware, data networks, and operating systems. Software engineering and communication technology along with social and ethical issues also falls under IT (Turban, et. al., 2003). All digital and computational forms of technology i.e. hardware and software are defined as Information and Communications Technology (ICT) (Shklovski, et. al., 2008). According to Heiskala, et. al., (2011) - Information technology-enabled services (ITES) involves digitizing and codifying transactions through information and communications technology (ICT) that bears potential to transcend the inherent limitations of traditional, labor-intensive "in situ" service models.

5.1.2 Outsourcing

Outsourcing is defined as the act of obtaining goods or services from individuals or organizations outside of a firm's boundaries (Brown and Wilson, 2005). As per Quélin and Duhamel, (2003) outsourcing involves shifting of a transaction to an outside supplier through a long-term contract that was previously governed internally, and also may involve the transfer of staff to the vendor.

5.1.3 Freelancing

Freelancers can be defined as skilled professional service providers who are neither employees nor employers, supplying labor on a short time basis under a contract for works or services in exchange of a fee to a range of business clients (Mould, et.al., 2014).

5.1.4 Online Marketplace

An online marketplace is a system that connects buyers and sellers in a time-sensitive and efficient manner. The system enables users who want something to connect with nearby users who can provide that something by applying automatically detected location data from the users' computing devices (Hunter, et. al., (2012). Some of

the most popular and active marketplaces bringing the freelancers and clients together around the world are- Upwork (previously oDesk and Elance), Fiverr, 99designs, Toptal, PeoplePerHour, Freelancer.com, iWriter, Guru etc. While there are lots of other international and local marketplaces, professional networking platforms of the likes of LinkedIn are also often seen to be providing freelancing opportunities to the community.

5.2 Chronological Development of IT, ICT and ITES in Bangladesh

5.2.1 The Developments

The IT/ICT/ITES landscape in Bangladesh has traversed almost half a century since the country's independence. During this time many developments have taken place that paved the pathway for freelancing in the 21st century. The use of computer in Bangladesh began in the 1960s. It became more prevalent in the 1990s and now widespread use in both offices and homes are found across the country. The first-ever computer in Bangladesh was installed at the Atomic Energy Commission in 1964. After that the use of mainframe computers for scientific and business data processing became a necessity for many organizations. An IBM 360 computer was set up at the Bureau of Statistics in 1969. The Adamjee Jute Mills also brought a mainframe for them in the similar time period. In the post-independence landscape, the computerization process was rejuvenated. Bureau of Statistics played a vital role in that. They brought and put into use computers like IBM 370, IBM 9100 and IBM 4341 etc. in phases since 1972. At the end of 1979, Bangladesh University of Engineering and Technology (BUET) introduced two Mainframe computers- IBM 370 and an IBM 4331- at the University and BUET Computer Centre was also founded. Throughout the 1980s many other institutions such as Atomic Energy Research Establishment (AERE), The Dhaka University Computer Centre and so on brought mainframe computers for their use. In Bangladesh, the institutional computer education began with the founding of the Computer Science and Engineering Department, BUET in 1984. Dhaka University launched its Computer Science Department in 1992. Presently, computer education is offered in almost all of the public and private universities. National University has also incorporated computer education in its curriculum. Higher secondary and secondary education had also included this area in their curriculum back in 1991 and 1994 respectively. Besides these, many other institutions across the country, are disseminating computer literacy for betterment. The revolution of microcomputers that started in the 1980s, had engulfed Bangladesh also, starting in the 1980s and becoming more prevalent in the 1990s. Now-a-days it is rare to observe any financially capable household devoid of a computer (Banglapedia, 2014).

First attempts to write Bangla on computer were made soon after the use of computer started in the 1980s. Developments took place in the form of making- Bangla fonts, keyboard layouts, Bangla interfaces, Bangla word processors etc. Exportable software development in Bangladesh began in 1995. In 1988, 'Bijoy' of Anando Computers and in 2003, 'Avro' of OmicronLab took Bangla writing on computer to the next level. Government promotes local software by extending tax benefits. At present more than 400 IT firms exports software and IT services all over the world. ICT export brought USD 1 billion in 2018 for the country and it is anticipated that by the year 2021 this amount will be about USD 5 billion. Besides the enterprises, there are approximately 5,00,000 active IT/ITES professionals working in the country.

A National Computer Committee was formed by the Ministry of Science and Technology in 1983. The committee was tasked to create the required policies while carrying out programs to expand and promote the effectual use of the sector. In 1988, the National Computer Board replaced the previous National Computer Committee. Within a very short time, in 1990, the ministry reformed the National Computer Board by reconstituting it as the Bangladesh Computer Council (BCC) to monitor computer-and IT-related undertakings in the country. BCC now works as a government advisory body on IT issues. Besides the government initiatives, there have been non-government efforts as well to take further the cause of IT/ICT/ITES in Bangladesh. In the late 1990s, Bangladesh Association of Software and Information Services (BASIS) was established. Established in 1998, BASIS acts as the national trade body for software and ITES industry of the country. The computer businessmen of the country formed Bangladesh Computer Samiti (BCS) in 1992. Later on September 1999, they established an extensive computer accessories market called BCS Computer City at IDB building located in Agargaon, Dhaka. The importance of these non-government bodies in the IT/ICT/ITES landscape of the country is paramount.

Back in 1995, use of internet in the country started for the first time in a limited capacity via offline e-mail. At present the number of nation-wide Internet Service Provider (ISP) stands at 129 as per BTRC. The government of Bangladesh as well as its various bodies now have web-presence through dedicated websites and portals. Corporations and other kinds of profit and non-profit organizations in Bangladesh now maintain websites for information dissemination. The internet penetration rate in Bangladesh has seen steady growth over the years among which the last five years had the highest rate –by the share of population 14.4% in 2015, 18.02% in 2016, 15% in both 2017 and 2018, 12.9% in 2019 (Statista, 2020). At present four mobile network operators are operating in Bangladesh. The first of these came into being back in 1989. All of these operators now provide 4G/LTE connectivity to the consumers. Though Bangladesh has seen great change in the country's overall internet infrastructure in the past decades, it still lags behind at rank 184 out of 221 countries in terms of broadband internet bandwidth (Cable.co.uk, 2020).

The advancement of IT/ICT/ITES in the country have blessed the financial institutions including the overall banking system tremendously. Banks are maintaining databases, extending their various services through online channels. The number of banks providing Mobile Financial Services (MFS) in the country right now is 15 and the average daily transaction stands at (in crore BDT.) 1,718.03 (Bangladesh Bank, 2020). Use of ATM is widespread in the major cities of the country. VISA, MASTERCARD, Skrill, Payoneer and similar other payment technology solutions are operating in Bangladesh. PayPal, a popular online payment system, came into service in Bangladesh in the late 2017. This development came as a long-awaited one from the freelancer community of the country.

The European Union (EU) ranked Bangladesh among the top 20 outsourcing destinations even though the country's small and medium enterprises (SMEs) had been suffering from lack of proper policy, legal framework and infrastructure including awareness. For a long period of time, ICT had been priority in policy but not in action in Bangladesh (bdnews24.com-Bangladesh's First Internet Newspaper, 2005). The lack of action in the area started to change when the extant Government committed to their 'Digital Bangladesh' agenda.

As part of the Bangladesh Government's Digital Bangladesh Agenda, in 2007 Access to Information, colloquially known as a2i was established. a2i is a flagship program, working closely with the Prime Minister's Office, specializing in citizen-centric public services innovations. The effort strives to simplify public service delivery and thereby improving the lives of the citizens of the country by enhancing overall transparency, governance and reducing the time, cost and difficulty in obtaining the governmental services. The program also aims to ensure information to the public as per the regulations of Right to Information Act, 2009. Till date, a2i has saved \$8.14 billion and 1.92 billion days through innovative and simple digital public services.

The year 2010 marks a significant development for the IT/ICT scene of the country as Bangladesh Hi-tech Park Authority (BHTPA), a government agency, was founded dedicated to establish, manage and operate technology business parks throughout the country. On 18 October, 2015 a Software Technology Park (STP) at Janata Tower was inaugurated by the Advisor to the Government of Bangladesh on Information and Communication Technology. The STP is situated at the heart of Dhaka city. It is a state-of-the-art, 12 storied multitenant building that accommodates IT companies, where conducive business environment is created and nurtured for smooth running for multi-national companies (Bangladesh Hi-Tech Park Authority, 2017). Similar other establishments such as- High-Tech Park, High-Tech City and Incubation Centers are under construction. Currently, there are 11 ongoing projects across the country, under the supervision and authority of BHTPA.

In a landmark development, Bangladesh got connected to its first-ever undersea cable South East Asia-Middle East-Western Europe 4 (SEA-ME-WE 4) in 2006. The second submarine cable SEA-ME-WE 5 was installed in 2017. (The Independent, 2017). The state-run Bangladesh Submarine Cable Company Ltd (BSCCL), established in July 2008, is now in the process of getting the third submarine cable of the country (The Daily Star, 2019).

Doel, the namesake of the national bird of Bangladesh, was the first laptop developed in the country, as part of national education program back in 2011. State-owned telecom company Telephone Shilpa Sangstha (TSS) undertook the operation, making it to be one of the world's cheapest laptop (Ethirajan, 2011). Bangladesh still remains unaccustomed to producing computer components and thus rely on imported accessories.

Back in September, 2014, Bangladesh was awarded by World Information Technology and Services Alliance (WITSA) with the prestigious ‘Global ICT Excellence Award’ in the category of ‘Public Sector Excellence’ in recognition of outstanding contribution in social development of the nation using IT (The Daily Star, 2014).

In recognition of the contribution to promote the use of ICT towards achieving the UN Sustainable Development Goals (SDGs), the Bangladeshi Prime Minister Sheikh Hasina received "ICT Sustainable Development Award" from the International Telecommunication Union (ITU) in 2015 (The Daily Star, 2015).

On 10 December, 2017 Prime Minister Sheikh Hasina inaugurated “Sheikh Hasina Software Technology Park” in Jessore to create employment to 5000 people through 48 IT-firms. This development would open up a new horizon of potential in the Bangladesh ICT sector. (Dhaka Tribune, 2017).

In the General Election of 2018, Electronic Voting Machine (EVM) was used in limited capacity. In future this technology is expected to be used widely. The Bangladesh Telecommunication Regulatory Commission (BTRC) awarded 4G licenses to the country’s four Telcos - Grameenphone, Banglalink, Robi and Teletalk on February 19, 2018 and thereby ushered Bangladesh into the fourth generation data services era (The Daily Star, 2018).

Bangladesh launched the country’s first-ever communication satellite on 10 May, 2018. The journey that started back in June 14, 1975 with the inauguration of the country’s first satellite earth station at Betbunia under Kawkhali upazila of the Rangamati district, by Father of the Nation Bangabandhu Sheikh Mujibur Rahman, has seen a new achievement unfold in the successful launching of Bangabandhu Satellite-1 in 2018. Through this event, Bangladesh became the 57th country in the world to have its own satellite in the orbit of the planet (Mustafa, 2018).

As of February 25, 2019, The Bangladesh Hi-Tech Park Authority (BHTPA) has been awarded the 'ISO 9001:2015' certification for quality management. Experts believe that such credential will attract more foreign entrepreneurs in the country's ICT sector (Uddin, 2019). In the late 2020, a joint initiative by ICT Division, Bangladesh Computer Council, iDEA Project, and Bangladesh Freelancers Development Society (BFDS) was made. Under this initiative a website – freelancers.gov.bd was launched. Also, a state-endorsed electronic/virtual identity card will be issued to the freelancers of the country. This identification will enable the freelancers to obtain credibility and move ahead smoothly with future endeavors (The Daily Star., 2020).

In order to meet the ever-increasing need of data, Bangladesh established a tier-3 National Data Center back in 2010. In 2019 a four-tier National Data Centre at Bangabandhu High Tech City in Gazipur was inaugurated and it is the 7th largest data center facility in the world (Dhaka Tribune, 2019). At present, both the governmental and non-governmental entities of the country are leaning toward technology. Entities with technical know-how and financial means are realizing that in today’s world where Blockchain Technology, Big Data and Artificial Intelligence are the new ways, adapting with IT/ICT/ITES is the only way moving forward, towards the fourth industrial revolution.

5.2.2. Annual Development Program (ADP) and the ICT Division

Table 1: Year-wise ADP Allocation for the ICT Division

Fiscal Year	Allocation (in lac BDT.)	Progress
2018-19	1,45,023.87	84.64%
2017-18	3,26,046.00	90.03%
2016-17	1,59,452.00	79%
2015-16	95,409.00	120.55%
2014-15	81,141.27	102.16%

Source: ICT Division, (2019)

In the Annual Development Program of the country, the budget allocation for ICT Division has been significant and in the recent years the progress has also been high as the country is undergoing many development projects to achieve ICT transformation.

5.2.3 Bangladesh's Position in Various Index

Bangladesh and some other countries' position in Global Services Location Index by A.T. Kearney in the recent years are as follows:

Table 2: Global Services Location Index by A.T. Kearney (Compiled by the authors)

Country	Rank in 2019	Rank in 2017	Rank in 2016
India	1	1	1
China	2	2	2
Malaysia	3	3	3
United States	6	22	15
United Kingdom	8	19	25
Sri Lanka	25	11	14
Bangladesh	32	21	22
Pakistan	37	30	28

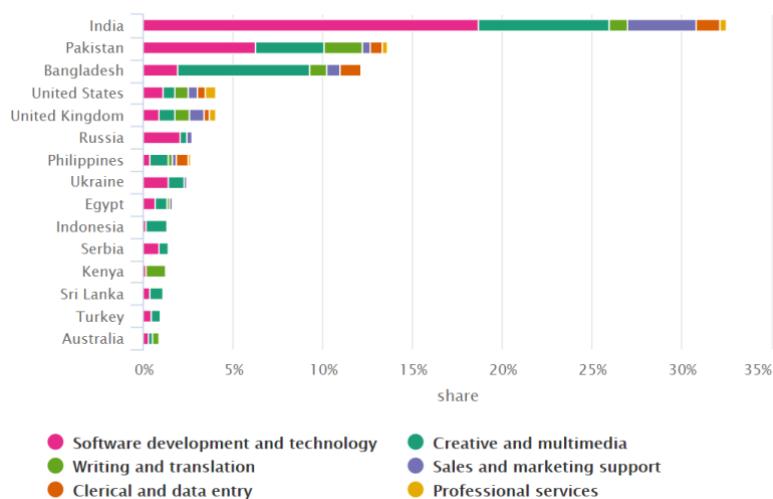


Figure 1: Market Share of Top 15 Worker Countries by Occupation.

Source: *Online Labor Index (OLI)* by the Oxford Internet Institute.

According to the Online Labor Index (OLI), Bangladesh currently holds the third position in the overall market share across six different occupational categories. Previously, Bangladesh held the second position, right after India. The top employer countries of the freelancing domain includes- USA, UK, Canada, Australia, India and Germany. Catering to the huge volume of works from these wealthy nations can definitely prove to be a stable foreign revenue earning source.

Table 3: ITU ICT Development Index of 2016 & 2017.

Country	IDI 2017 Rank	IDI 2016 Rank
Sri Lanka	117/176	116/176
India	134/176	138/176
Bangladesh	147/176	146/176
Pakistan	148/176	148/176

Source: ITU (2017)

Bangladesh was ranked 147th out of 176 countries in the ITU ICT Development Index 2017, maintaining a similar position from the previous years in the medium and low IDI groups. In 2015, Bangladesh's position was 143th with 2.25 points. In 2014 it was 145th position with 1.97 points and in 2013, Bangladesh's position was 146 (The Daily Star, 2016). The industry experts say that though Bangladesh's development index point increases every year, the country failed to grow faster in comparison with other countries. This slow growth could be attributed to a number of challenges. Fostering congenial environment and support system may prove to be helpful in overcoming these challenges.

The country secured 115th position out of 193 countries in the E-Government Development Index 2018 by UN. (BCC & ICTD, 2019).

5.3 Regulatory Framework of IT, ICT, ITES in Bangladesh

5.3.1 The National ICT Policy

The Bangladesh government devised the National ICT Policy in 2009 followed by amendments in 2015 & 2018 to actualize Digital Bangladesh by the year 2021. The National ICT policy includes a single vision, 8 objectives, 55 strategic themes and 343 action items. This policy was formulated based on the Article 19 of the Constitution of the People's Republic of Bangladesh, where it is clearly stated that "ICT is the best mean to ensure equality of opportunity to all citizens, remove social and economic inequality between men and women, and ensure the equitable distribution of wealth among citizens, and of opportunities in order to attain a uniform level of economic development throughout the Republic." (BCC & ICTD, 2019)

5.3.2 ICT and e-Governance related Laws in Bangladesh

To understand a sector, one must understand the legislature controlling the sector. There are a number of Acts that have been formulated over the years for dealing with the ICT and e-Government issues in the country.

Table 4: ICT and e-Governance Laws in Bangladesh.

Sl. No.	Law	Year of Enactment	Category of Purpose
1	Information & Communication Technology Act	2006 2008 (Amendment) 2009 (Amendment) 2013 (Amendment)	<ul style="list-style-type: none"> • Foundation for Information Society • Adverse Effect Protection • ICT Industry Development
2	Right to Information Act	2009	Information Service Promotion e-Government (Administration)
3	Bangladesh High-tech Park Authority Act	2010	Information Service Promotion Promotion for information environment
4	BCC Act	1990	Information Service Promotion Promotion for information environment
5	Telecommunication Act	2001	Adverse Effect Protection ICT Industry Development
6	Digital Security Act	2018	Adverse Effect Protection

5.3.3 IT/ICT Regulatory Bodies and Associations in Bangladesh

The onus of overseeing IT and ICT activities undertaken throughout the country falls on three ministries. The Ministry of Post and Telecommunications and Information Technology (MoPTIT) has two divisions. The Post and Telecommunications Division is the authority responsible for telecommunication infrastructure whereas the ICT Division works for eGovernment, IT/ITES business promotion, ICT policy formulation, supervision of ICT

projects etc. The Ministry of Science and Technology (MoST) discharges its duty by formulating national policies on science and technology and coordinating science and technology-based initiatives and activities of different ministries. Finally, the Ministry of Information (MoI) takes care of dissemination of information.

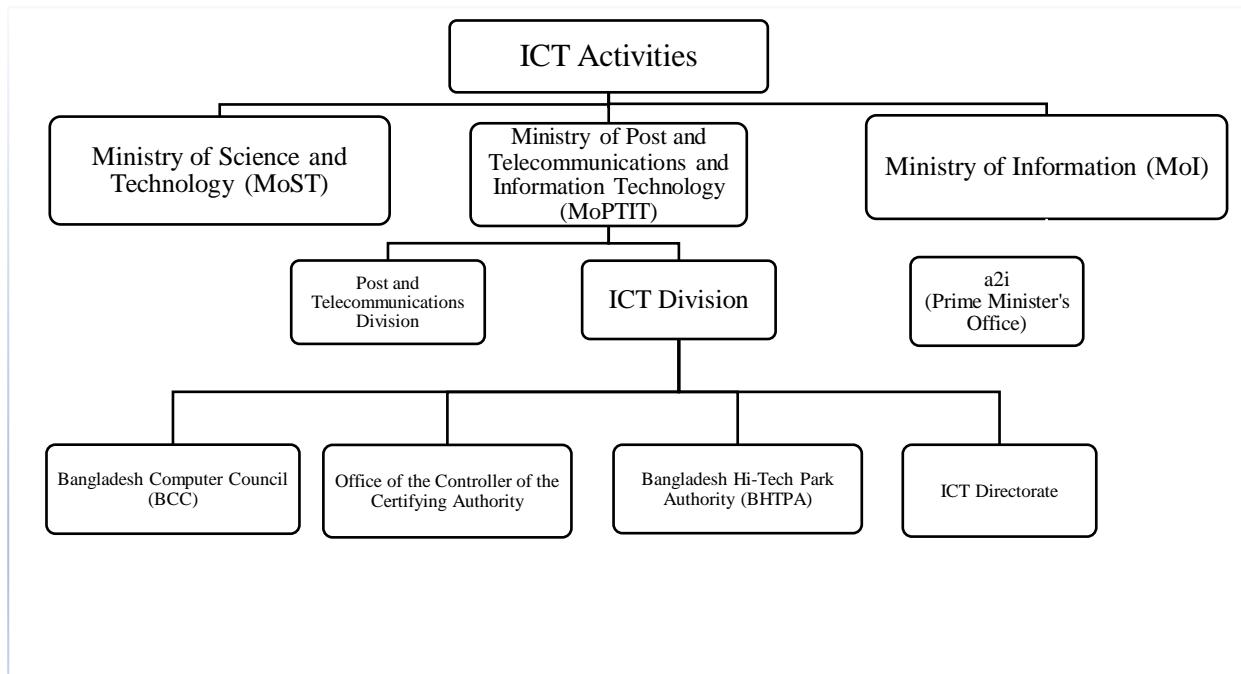


Figure 2: IT/ICT Regulatory Bodies in Bangladesh.

The ICT Division operates through four other organizations- the Bangladesh Computer Council (BCC), the Office of the Controller of the Certifying Authority, Bangladesh High Tech Park Authority (BHTPA) and ICT Directorate. Besides these, a2i, a sub-organization of the ICT division also works for ICT activities and e-governance while keeping close tie directly with the Prime Minister's Office.

While there is no organization solely dedicated to the e-Government, the Cabinet Division, ICT Division including a2i program, lead the overall ICT activities of the country.

BASIS: Beside the regulatory bodies, BASIS plays a pivotal role in the IT and ITES arena of the country. BASIS actively promotes the IT/ITES market, arranges flagship events like SOFTEXPO, provides recognition to the successful IT entities, extends exclusive memberships to IT firms and contributes to the overall IT eco-system of the country in many ways.

5.4 Review of Existing Literature in the Field of Research into IT-Freelancing

In the global context, a good number of research studies could be found relating to Online Marketplace based or IT Freelancing. Dubey et al. (2017) found out, upon a study conducted on 37,599 freelancers that a pay gap exists between male and female freelancers, even though it may be expected that such kind of gap should not be much, over the online platforms. In Gheorghe (2015), an overview of the most prominent Freelance Marketplaces has been furnished alongside critical examination of the market structure, distribution of workforce and overall trend in the IT freelancing landscape. McKeown (2015) talks about concepts such as entrepreneurship, self-employment, freelancing and Independent Professionals (IPro) in order to point out various implications and their consequences of social and government motives in relation to people working as 'nano-businesses'. Yoganarasimhan (2012) suggested a framework that uses 'dynamic selection' in matching buyers with sellers in an online freelance marketplace. In this work the author questioned the soundness of reputation-based matching systems.

Table 5: Earning Gap and Expectation Gap in Bangladesh for different job categories.

Job Category	Earning per hour (in USD)					Billing Rate (in USD)				
	Male		Female		Earning Ratio	Male		Female		Billing Ratio
	Median	Std. Dev.	Median	Std. Dev.		Median	Std. Dev.	Median	Std. Dev.	
Administrative	14	39.1	10	30	0.71	8.62	6.02	7.04	5.28	0.81
Design	20	38.1	7	61.1	0.35	11.32	7.28	8.85	4.74	0.78
Business Services	23	38	19	62.3	0.82	9.34	7.4	6.28	4.13	0.67
Networking & Infrastructure Management	24	54.4	13	30	0.54	13.54	8.28	10.24	8.85	0.76
Sales & Marketing	10	33.5	3	86.1	0.3	7.33	5.3	6.43	5.74	0.88
Writing & Translation	13	44.8	12	39.2	0.92	8.28	6.6	6.9	5.9	0.83
Software Development	23	97	17	59	0.73	11.4	7.2	10.1	6.9	0.88

Source: Dubey et al. (2017)

In the Bangladeshi context, Bose et al. (2013) conducted survey-based study to assess nine aspects related to freelancing in Bangladesh. The study pointed out that Intellectual Property Rights is a burning issue when it comes to software development and similar other creations in the country. In a study conducted in 2017, survey on freelancers in Bangladesh brought out a snapshot of how the then existing scenario was in the software and IT service industry of the country. The study investigated six specific areas to extract the prevalent practices (Das et al., 2018). In another study, the relationships between IT Freelancers' entrepreneurial behavior, IT self-efficacy and their performance were studied. The same study also sought to bring forth the association between social capital and IT self-efficacy (Sultana et al., 2019). Rahman & Rahman (2017), besides presenting the existing scenario of freelance market in Bangladesh, outlined IT freelancing as a solution to the country's ever-increasing unemployment problem. A holistic view focusing on the problems and prospects of IT and IT-enabled services (ITES) being outsourced from Bangladesh, is found in the work of Askari et al. (2015). In this study, the then-existing scenario and trend of IT & ITES industry in Bangladesh has been presented very thoroughly. One crucial area that is presented in that study is the existing government initiatives, policies and programs involving IT and ITES in Bangladesh. The all-time Payments in IT (in terms of USD) on elance.com (currently Upwork) for Bangladesh was \$6,641,611 which is 0.93 percent of the market share (12th Position in the world) (Gheorghe, 2015).

6. Analysis of Current Status of the IT Freelancing Business in Bangladesh

In the study, the current status of the IT-freelancing business in Bangladesh was assessed through conducting a questionnaire-survey. Respondents were asked about range of issues starting from their social-demographic profile to pros and cons of conducting IT-freelancing operations. Under this section, findings about all those areas are categorized and presented in a coherent manner.

6.1 Socio-Demographic Profile of Freelancers

Table 6: Socio-Demographic Profile of Freelancers

Demographic Variables		Frequency	Percentage (%)
Age	Young (Less than 35)	50	96.2
	Adult (More than 35)	02	3.8
Gender	Male	48	92.3
	Female	4	7.7
Level of education	Up to Secondary Education	6	11.5
	Higher Secondary Education	4	7.7

	Tertiary Education	42	80.8
Educational Background	Science Background	22	42.3
	Non-Science Background	30	57.7
Language proficiency	Taken any certified courses on English language	20	38.5
	Taken any certified courses on other language	1	1.9
	No language training	31	59.6
Residential status	Rural Area (Village)	7	13.5
	Urban Area (Town)	45	86.5
Location of Workplace	Urban within City Corporation	36	69.2
	Rural	11	21.2
	Urban without City Corporation	5	9.6
Monthly Earnings	Up to BDT. 25,000	25	48.1
	BDT. 25,000-50,000	15	28.8
	BDT. 50,000-75,000	3	5.8
	BDT. 1,25,000-1,50,000	2	3.8
	More than 2,00,000	2	3.8
	Not interested to disclose their income	5	9.6

The Table 6 shows that the majority of the respondents in this study are male with only 7.7% female participants. Nearly all the respondents are from young age group (96.2%). Among the respondents, 80.8% have completed the Tertiary Education; 42.3% freelancers are from science and 57.7% freelancers are from non-science background. Besides, while more than half of the freelancers haven't taken any certified language courses, nearly 40% have taken certified English language courses. It was also found that, among the freelancers studied, about 87% are living in the urban areas. Moreover, 79% freelancers are working from urban areas- either within city-corporation or outside city-corporation. Almost half of the freelancers are earning up to BDT. 25,000 on average every month. Also, 29% freelancers have an earning range of BDT. 25,000-50,000 per month, while for 14% of total respondents, earning is varying at a range from BDT. 50,000 to 200,000 per month.

6.2 Status of the Freelancing Activities

Table 7: Status of the Freelancing Activities

Subject	Details Classification	Frequency	Percentage (%)
Are you a fulltime freelancer?	Yes	14	26.9
	No	38	73.1
For how long are you doing freelancing jobs?	3 years or more	16	30.7
	Less than 3 years	36	69.3
How many hours do you work in a week on an average?	Less than 10 hours weekly	11	21.2
	10-20 hours weekly	13	25.0
	21-30 hours weekly	15	28.8
	31-40 hours weekly	5	9.6
	More than 40 hours weekly	8	15.4
Is your working hour consistent over different jobs?	Yes	12	23.1
	No	19	36.5
	Neutral	21	40.4
Does freelancing generate stable income for you?	Yes	22	42.3
	No	13	25.0
	Moderate	17	32.7
Do you maintain multiple accounts in each	Yes	8	15.4
	No	44	84.6

marketplace for getting more jobs?			
What is your future plan regarding IT-Freelancing?	Continue as long as it earns enough money	18	34.6
	Continue for next few years	1	1.9
	Continue until getting a secured salaried job	14	26.9
	Become an IT entrepreneur	17	32.7
	Others	2	3.8
Have you received any national/international awards, accolades and recognition for doing IT-Freelancing?	Yes	4	7.7
	No	48	92.3

Table 7 shows that 73.1% freelancers are working on a part-time basis whereas 26.9% conduct freelancing on full time basis. On average in a week, four out of every five freelancers are working for 10 hours or more, with 15.4% freelancers working for over 40 hours weekly. In addition, often their working hour varies across different jobs, where 23% are enjoying a consistent working hour.

The study reveals that 42.3% of freelancers have supported Freelancing as a stable source of income but 25% freelancers have denied this proposition. About 33% have identified this as a moderately stable source of income. Furthermore, 85% of the freelancers are maintaining only single account in each marketplace to get their jobs. In addition, half of the freelancers want to continue freelancing as long as it provides a sufficient income for them or until they secure a salaried job. On the other hand, 33% freelancers want to grow as an IT entrepreneur. A very few freelancers (7%) have received national or international awards, accolades and recognition for doing IT-Freelancing.

6.3 Training Status and Expertise of the Freelancers

Table 8: Training Status of the Freelancers

Subject	Details Classification	Frequency	Percentage (%)
Have you received any training on freelancing works?	Yes	26	50
	No	26	50
What was the source of training?	Government IT Institute	9	34.6
	Private IT Institute	7	26.9
	Online Paid	9	34.6
	Online Unpaid/Free	1	3.8
What was the mode of training?	Paid	18	69.2
	Unpaid	8	30.8
What was the source of training?	Government IT Institute	1	3.8
	Private IT Institute	7	26.9
	Online Paid	9	34.6
	Online Unpaid/Free	1	3.8

The study shows that, half of the freelancers have received training. Their training sources include Govt. IT Institute, online training services, and Private IT institute. Majority of these freelancers used paid sources for receiving training, vastly from either Private IT institute or Online sources.

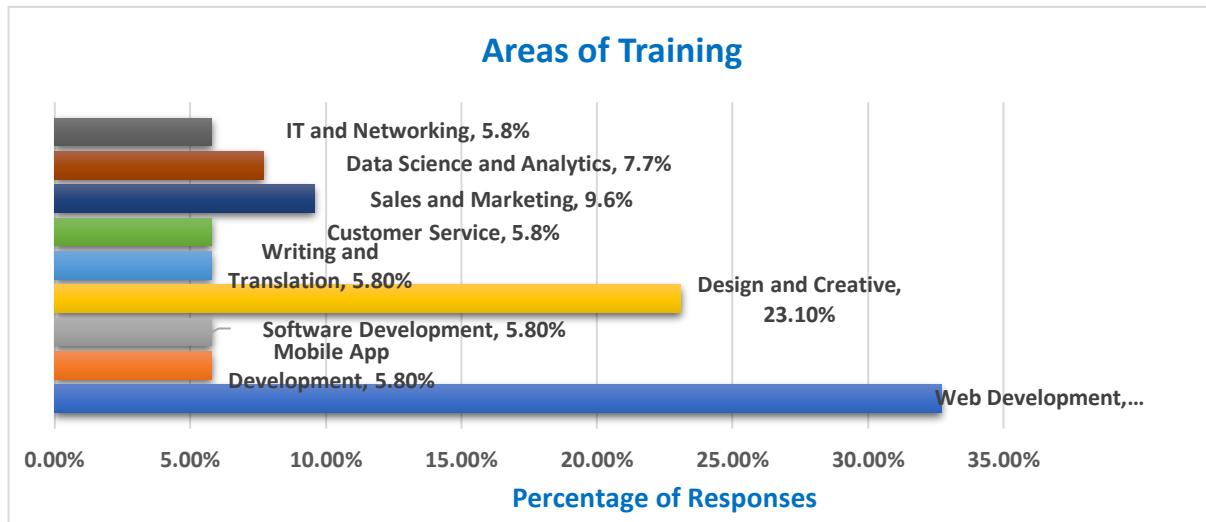


Figure 3: Areas of Training

A significant number of respondents have received training on Web Development and Design and Creative field. While the other areas of training include Sales and Marketing, Data Science and Analytics, Mobile App & Software Development, Writing and Translation, Customer Service etc., though they represent a minor percentage.

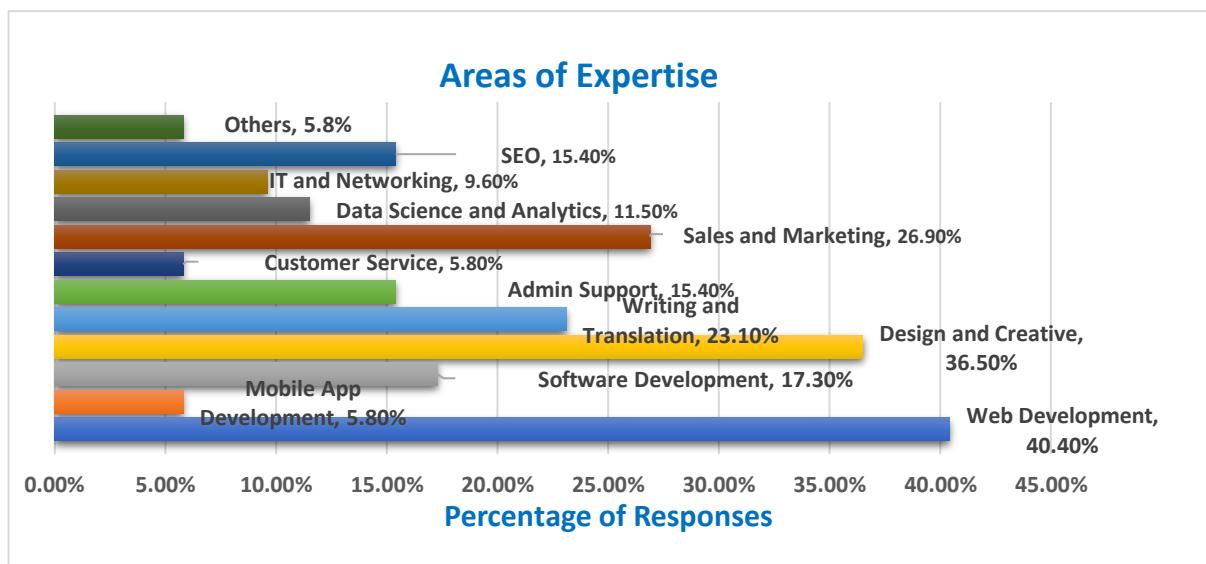


Figure 4: Areas of Expertise

With the training received, majority of freelancers have gained expertise in Web Development, Design and Creative, and Sales and Marketing field. Furthermore, Writing and Translation, Software Development, SEO, and Admin Support are the other mentionable areas of their expertise.

6.4 General and IT-Infrastructural Facilities

Table 9: Infrastructural Facilities

Subject	Details Classification	Frequency	Percentage (%)
Housing facility that you use for work	Rented	34	65.4
	Self-owned	18	34.6
Number of computers used for work	Single	37	71.2
	Multiple	15	28.8

According to the study, 65% freelancers are using rented housing facility to run their operations; rest of the freelancers are conducting operations from self-owned facility. A little more than 71% freelancers operate with single computer. Meanwhile, rest 29% freelancers are using multiple computer systems.

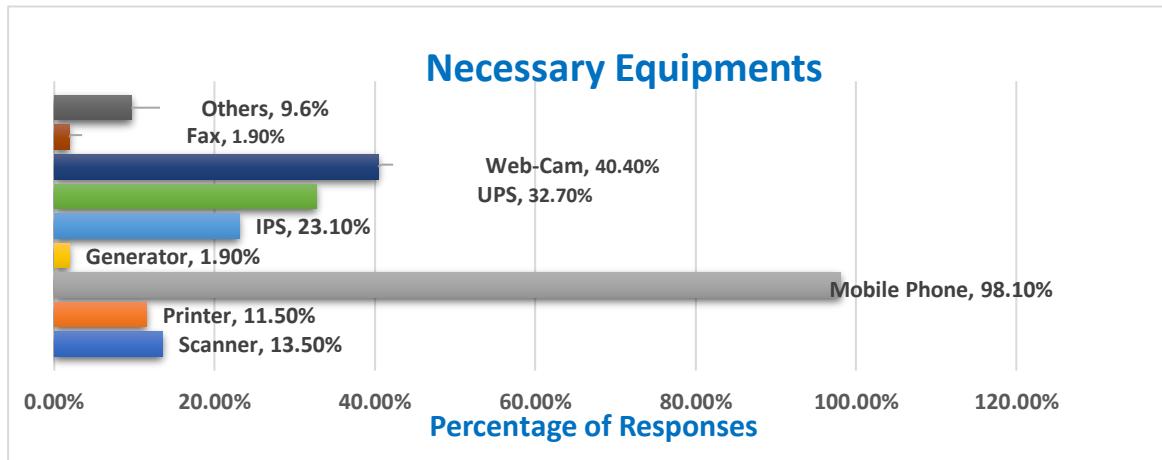


Figure 5: Necessary Equipment

Apart from regular/standard computer setup, Mobile phone is the most mentioned device they use in their operation followed by Web-Cam and UPS. Some of them also use IPS, Scanner, and Printer as supporting devices.

Table 10: Internet Support

Subject	Details Classification	Frequency	Percentage (%)
What mode of internet service do you avail for work?	Dial-up	1	1.9
	Broadband	49	94.2
	Others	2	3.8
What internet bandwidth do you use for your work?	1-5 mbps	31	59.6
	6-10 mbps	16	30.8
	11-15 mbps	5	9.6
What type of bandwidth do you use?	Shared	42	80.8
	Dedicated	10	19.2

Table 10 shows that 94% freelancers are using the broadband internet services for their work with 90.4% having bandwidth speed ranging from 1-10 mbps. Four out of every five freelancers are using shared bandwidth for their operation.

6.5 Motivations of a Freelancer

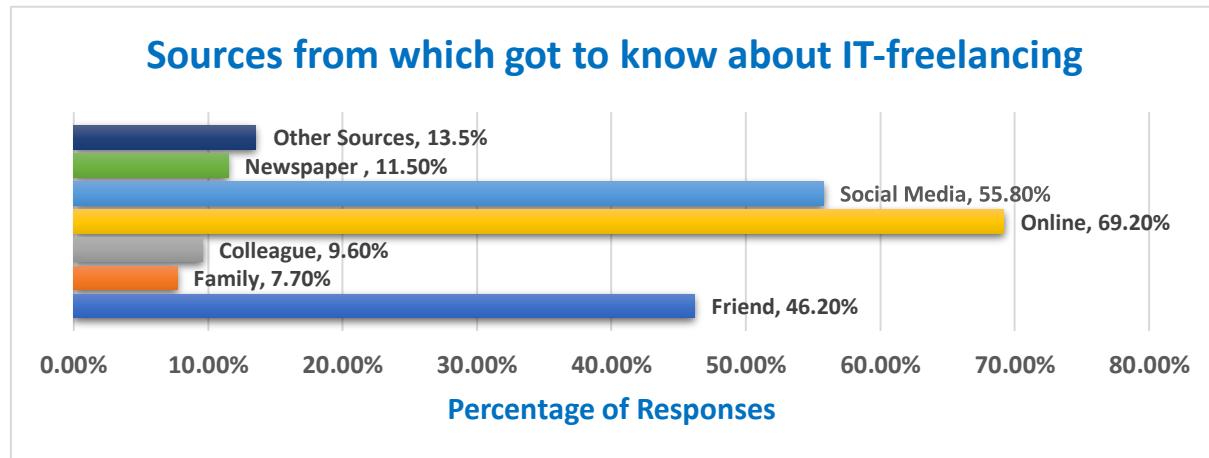


Figure 6: Sources of IT-freelancing information.

According to the survey, among the respondents, the top three popular sources of information regarding freelancing were online platforms, Social media and friends. They have also acquired information from their colleagues, newspaper and other medias.

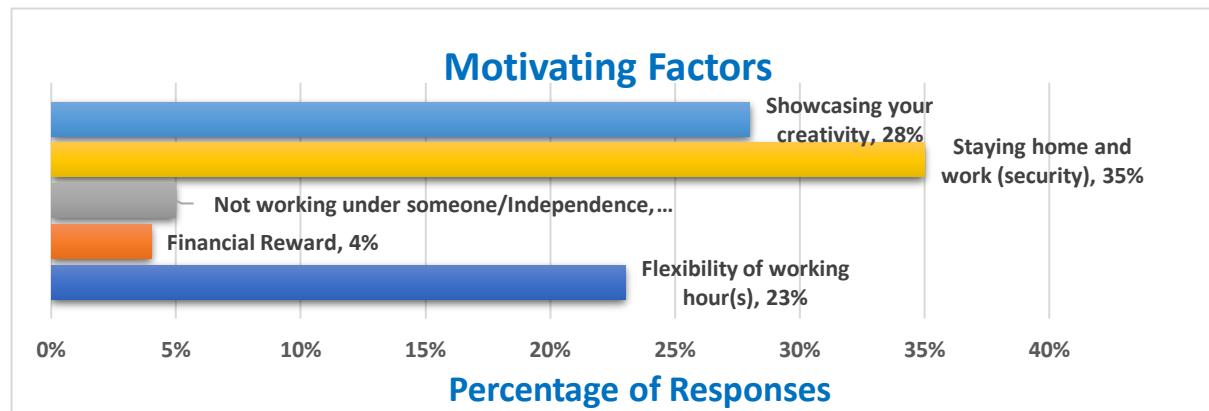


Figure 7: Motivating Factors

Flexibility of working hour(s) along with financial reward, security of working from home and independence at work have motivated most of the observed freelancers to choose freelancing as their preferred profession. Also, 30.8% of them have come into freelancing career to showcase their creativity.

Most of the freelancers are either satisfied or highly satisfied with the compensation they receive from freelancing.

Table 11: Satisfaction with Compensation

	Frequency	Percent
Highly Satisfied	12	23.1
Satisfied	31	59.6
Neutral	6	11.5
Dissatisfied	3	5.8
Total	52	100.0

6.6 Market Analysis

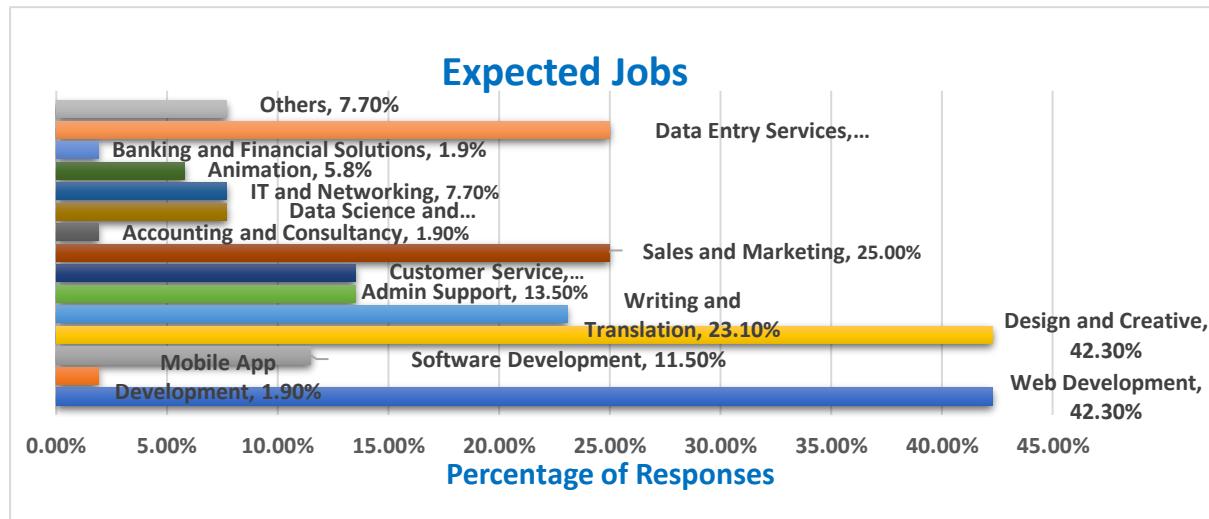


Figure 8: Jobs Sought by the Freelancers.

In most of the cases, freelancers have shown their preference for selected number of areas namely Web Development, Design and Creative, Sales and Marketing, Data Entry Services, Writing and Translation etc. A very marginal number of them have shown versatility in their working portfolios in the areas of Admin Support, Data Science, IT and Networking, Animation as their intended jobs.

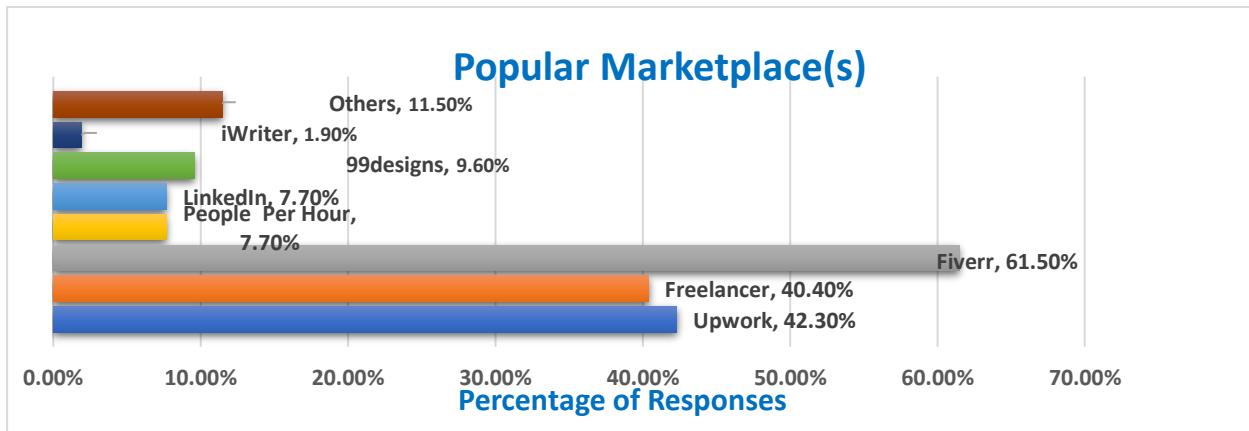


Figure 9: Popular Marketplaces.

Globally popular marketplaces like Fiverr, Upwork, Freelancer are also mostly preferred by the Bangladeshi freelancers with fewer working in the platforms such as 99designs, LinkedIn, People Per Hour.

Table 12: Work Scenarios

Subject	Details Classification	Frequency	Percentage (%)
Does the time zone difference between you and your client in any way hamper your daily life?	Yes	21	40.4
	No	18	34.6
	Neutral	13	25.0
What attribute do you emphasize on while undertaking a work?	Quality of work	26	50.0
	Quickness of completion	3	5.8
	Both	23	44.2
Do you employ other freelancers to work under/with you?	Yes	6	11.5
	No	46	88.5

The daily life of 40.4% of the freelancers are hampered by the time zone difference whereas 34.6% do not face such problem. Quality of work gets priority to 50% of the freelancers and 44.2% stress on both quality and completion of the work.

Table 13: Client and Negotiations Plan

Subject	Details Classification	Frequency	Percentage (%)
Basis of Payment	Hourly	14	26.9
	Job wise	38	73.1
	Contract Basis	32	61.5
	Others	2	3.8
What is the nature of your client/customer?	Local Individual	5	9.6
	Local Organization	4	7.7
	International Individual	36	69.2
	International Organization	7	13.5
What type of clients do you work for?	Same/repetitive client	25	48.1
	Random new client for each job	27	51.9

For the payment basis, majority of them (73.1%) prefer job wise payment. Contract basis payment was the next popular payment basis (61.5%) for them, while a marginal number of them also accept hourly payment for the task completed.

Only a few are working for local individual or organization. For more than 80% freelancers, their clients are international individual or organization. Besides, they work repetitively for same client and also for random new client almost equally.

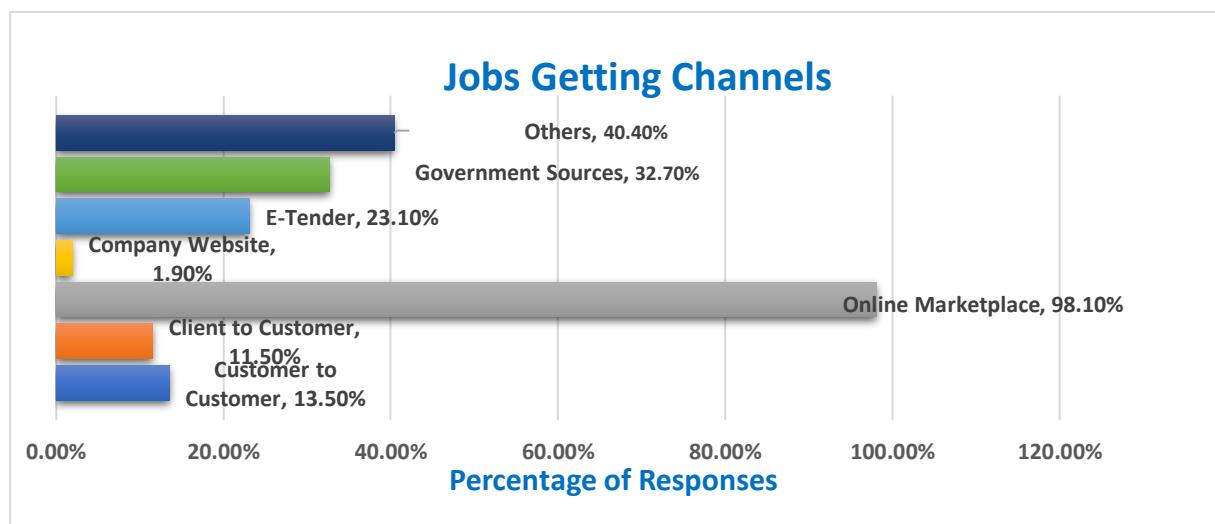


Figure 10: Popular Marketplaces.

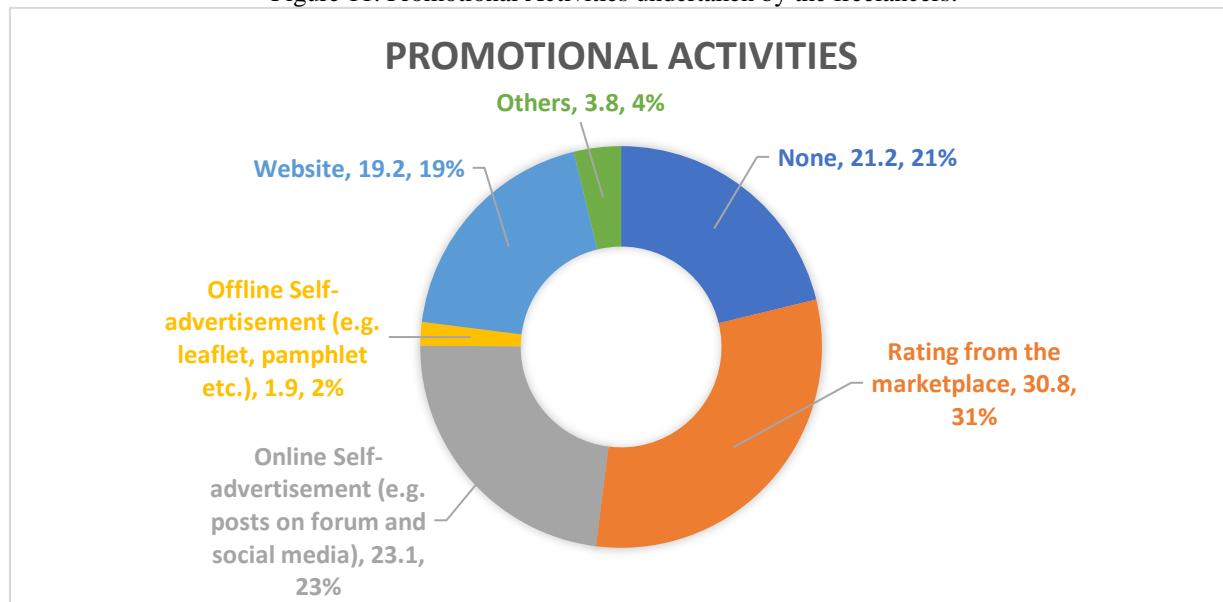
Freelancers have identified online marketplace as their biggest channel of getting job. Besides, they also get jobs through Customer to Customer, Client to Customer channels and Company Websites. On the other hand, Government Sources have been identified as a very insignificant source from where a very fewer number of jobs has been channeled to them.

Table 14: Major Platforms used in the Freelancers-Client Communication.

Communication Platforms	Telephone/Mobile	E-mail	Video Chat/ Conference	Written Chat	Through the social media	Others
Frequency	13	39	25	33	19	3
Percentage	25.0%	75.0%	48.1%	63.5%	36.5%	5.8%

Freelancers use telephone/mobile, e-mail, video chat/conference, written chat, and social media in 25.0%, 75.0%, 48.1%, 63.5% and 5.8% respectively.

Figure 11. Promotional Activities undertaken by the freelancers.



For the majority of the freelancers, their promotional activity includes Rating from marketplace, posts on forum and social media, Website and others. 20% have not taken any promotional activity.

6.7 Payment System & Associated Factors

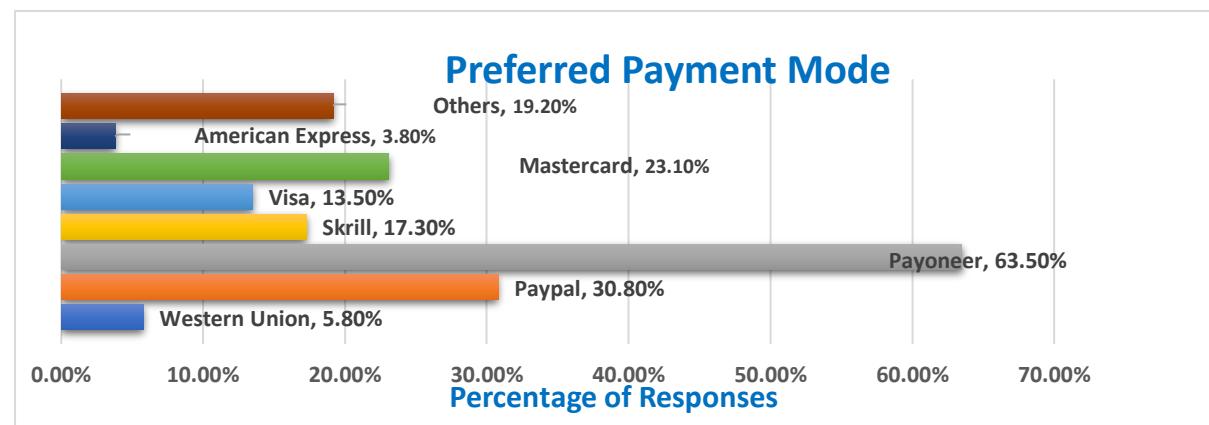


Figure 12: Preferred Payment Modes.

Most of the respondent freelancers prefer Payoneer, Paypal, Mastercard, and Skrill as their payment gateway. Also, a marginal portion of them use other gateways as Visa, Western Union, and American Express etc.

Table 15: Payment Issues

Subject	Details Classification	Frequency	Percentage (%)
Do you think there is element of risk associated with the available payment systems?	Yes	20	38.5
	No	22	42.3
	Neutral	10	19.2
What is the preferred currency of payment for your clients?	USD	47	90.4
	EUROS	1	1.9
	Taka	4	7.7

While 42% of the freelancers do not find any risk associated with the available payment systems, a significant proportion of freelancers (38.5%) have identified the presence of risk factors in the same. Also, most of the freelancers prefer US Dollar as currency of payment with a very small number favoring for the local currency Taka.

6.8 Funding and Cost Issues

The study shows that 86% of the freelancers have initiated their operation with a capital of less than BDT. 50,000. Capital of more than BDT. 50,000 up to BDT. 1,50,000 were used by only 14% freelancers.

Table 16: Investment at Inception

How much capital did you invest at the inception of operation?	Less than BDT. 25,000	37	71.2
	BDT. 25,000-50,000	8	15.4
	BDT. 50,000-75,000	2	3.8
	BDT. 75,000-1,00,000	3	5.8
	BDT. 1,25,000-1,50,000	2	3.8

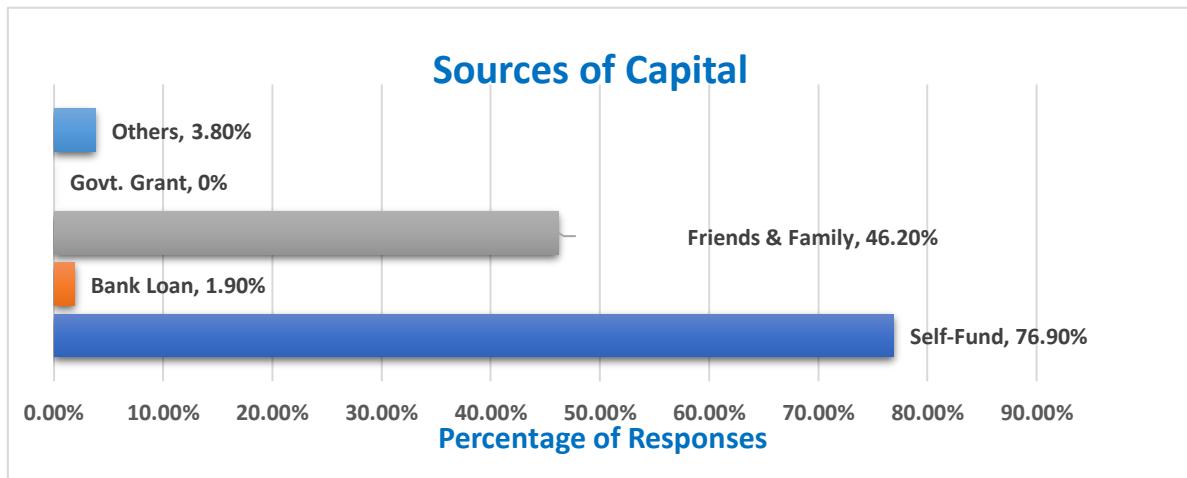


Figure 13: Sources of Capital.

Among the respondents, every two of three freelancers have started their operation with Self fund, while half of them have collected capital from their friends and families. Although, a very few have used Bank Loans and other available sources as their capital source, none of them have received any government grant or loans.

Table 17: Fixed Costs

Subject	Details Classification	Frequency	Percentage (%)
Fixed costs incurred per month for work (e.g. Utilities, Internet bill, Salary to Assistance etc.)	<BDT. 1,000	13	25.0
	BDT. 1,001-2,000	18	34.6
	BDT. 2,001-3,000	8	15.4
	BDT. 3,001-4,000	3	5.8
	BDT. 4,001-5,000	3	5.8
	>BDT. 5,000	7	13.5

For their operation, fixed cost incurred per month is up to BDT. 3000 for 75% of the freelancers.

7. Challenges of Freelancing Business

7.1 Problems and Obstacles Faced by Freelancers

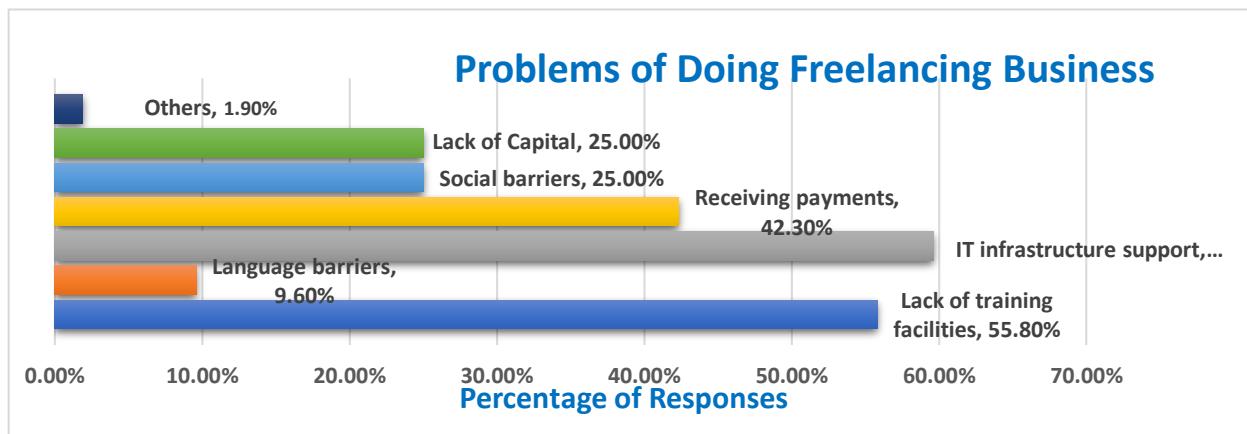


Figure 14: Problems faced while doing freelancing operation.

While initiating their journey as a freelancer, they have observed lack of IT infrastructure support and lack of training facilities as their main barriers. Nearly half of them have also mentioned payment receive related issues as a major problem along with lack of Capital and Social Barriers as impediments at the time of their inception. When asked about the major and minor obstacles of engaging in IT freelancing, the respondents of the survey highlighted the followings:

It was found that the respondents thought –load shedding, cost of obtaining internet, access to finance, lack of overall IT infrastructure, ease of payments, competition at marketplace, obtaining quality certification and work order, social acceptability to be the major obstacles faced everyday by the freelancers. On the other hand, country branding, communication, lack of expertise, government regulation, payment reliability, bias of clients etc. were thought of as minor issues.

7.2 Common Mistakes of the Freelancers

As per the findings of the study, the common mistakes committed by the freelancers while applying for jobs include-

- Applying for wrong job
- Inaccurate application format
- Failing to meet deadline
- Plagiarism
- Having multiple accounts
- Inability in work portfolio design
- Not knowing how to pitch
- Accepting whatever job that are available without having
- Lack of professionalism
- Furnishing false information about skills and expertise
- Having insufficient knowledge about marketplace

- Unable to understand the job details and client demands
- Weak communication skills
- proper skills and budget understanding
- Putting less importance to client reviews

7.3 Pejorative Social Perception about IT-Freelancing

Through the study it was found out that in Bangladesh, society by and large still does not accept independent freelancing to be an honorable profession and career choice. Some pejorative perceptions from both family and society hindered the freelancers moving forward in their career. While some of these perception may have some pragmatic underpinning, most are grounded in lack of knowledge and stereotypical attitude.

From the freelancers participating in the survey, it was found out that some of the following perceptions are held by the people around the freelancers:

- Some people do not even consider freelancing to be a proper job.
- Many people question the legality of freelancing.
- Traditional thinkers often prefer conventional jobs over freelancing due to greater social security.
- Unfortunately, many consider freelancing to be ‘wasting of time’.
- Technicality of the online marketplace and the whole mechanism are not understandable to many.

While these perceptions are held by many people, there are others who welcome this new area of earning positively. They consider this to be a viable profession that can be a sustainable source of income. Also, they consider it to be a very skill-based area of working. Many a times it is seen very positively when students are earning besides their studies through freelancing. All in all, there are still room for improvement regarding the social perception about IT-freelancing as source of income.

8. Words to the New Freelancers

From the study, the following suggestive remarks were extracted from the present freelancers for the ones coming new to the profession:

- First and foremost, fully comply with the standards of marketplaces.
- Develop necessary skill sets first and then go for earning through projects.
- Keep improving by learning new skills.
- Specialize in an area instead of trying to participate in every work category.
- Respect clients' demand.
- Maintain a balance between quality of work and payment.
- Avoid copying other people's works.
- Showcase creativity and build trust.
- Make a good portfolio.
- Not compromising in quality of work.
- Collaborate with someone who is already established in the marketplace, if possible.
- Being professional in every step.
- Develop strong communication skill.
- Work with dedication and keep patience.
- Should practice good work ethics.
- Work towards setting a future goal.
- Understand clients' project properly.
- Remain polite and maintain time table along with professionalism.
- Should remain vigilant about rating provided by the clients, as it narrates one's work history.

9. Future Needs of the Freelancing Business

Based on the findings of the study, the followings are recommended to address the future needs of IT freelancing sector in Bangladesh:

- Government should take initiatives to train up more young population to incorporate them in IT sector while ensuring greater female participation.
- Necessary infrastructures and environment have to be provided to foster the freelancers to grow as IT entrepreneurs as well as promoting this sector as a promising job source.
- Commencing national awards and recognition by the government for the successful freelancers to motivate more people to come in this sector.
- Establishing more public training facilities across the country focusing on the market demands and future trends to utilize the country demographic dividends and also supporting the private IT institutes and training facilities. These trainings may include building technical expertise in major occupational categories, language & communication skills and soft skills.
- The national portal needs to be more efficient in circulating information regarding freelancing opportunities, new markets, training, government initiatives and other contemporary issues.
- Uninterrupted broadband internet services should be ensured for the freelancers across the country with a higher bandwidth at a subsidized price along with uninterrupted power supply.
- The universal and popular payment gateways should be made available for ensuring secured transactions.
- A separate government fund should be apportioned to provide the necessary capital through the banking channel to support the freelancers in initiating and expanding their operations.
- Government should raise social awareness about this potential sector through campaigns and other publicity tools to remove the social barriers and elevate the social acceptability of the profession.
- Efforts should be exerted to highlight and improve the overall country branding.
- Enforcement of relevant rules and regulations to foster this promising sector.
- Updating the National Policy keeping greater consideration to the IT freelancing activities.
- With collaboration of strategic partners a sustainable IT eco-system should be developed in actualizing the ‘Digital Bangladesh’ agenda.

10. Conclusion

Despite facing myriad of problems such as lack of financial support, underdeveloped IT infrastructure, social stigma, difficulty in payment etc. Bangladesh has been marching ahead and has already established itself as a potential global freelancing hub. In order to unleash the true potential of the growing IT based freelancing sector, a holistic effort from all the stakeholders is required. Thus, more research and policy discussions should be conducted to find the optimal course of action, keeping focus on the appropriateness of national policy, monitoring of efficiency and progress of government initiatives and so on.

References

- Askari, M. M., Zabeen, S. M. S., & Uddin, K. M. (2015). Problems and Prospects of IT and IT Enabled Services Outsourcing in Bangladesh. *Bangladesh Journal of Tariff and Trade*, 1(3), 34–59.
http://btc.portal.gov.bd/sites/default/files/filesbtc.portal.gov.bd/publications/ae3df639_e50a_4d18_be5d_e897880b3f1b/Journalissue3.pdf
- Bangladesh Computer Council (BCC) & ICT Division. (2019, August). e-Government Master Plan for Digital Bangladesh.https://ictd.portal.gov.bd/sites/default/files/files/ictd.portal.gov.bd/page/a59bf1d9_b3b1_48bbaff9_dbf8ef9d559d/e-Government%20Master%20Plan%20for%20Digital%20Bangladesh%20Final.pdf
- Bangladesh Hi-Tech Park Authority. (2017, May 5). *Bangladesh Hi-Tech Park Authority*. <http://bhtpa.gov.bd/>
<http://bhtpa.gov.bd/site/page/c858b257-27e7-4434-86f6-467406153066/Janata-Tower-Software-Technology-Park>
- Bangladesh Bank (2020). *Mobile Financial Services (MFS) comparative summary statement of September, 2020 and October, 2020*. Bangladesh Bank, Central Bank of Bangladesh.
<https://www.bb.org.bd/fnansys/paymentsys/mfsdata.php>

- bdnews24.com-Bangladesh's First Internet Newspaper. (2005, May 27). EU ranks Bangladesh among top 20 IT outsourcing destinations despite lackings. Bdnews24.Com. <https://bdnews24.com/business/2005/05/27/eu-ranks-bangladesh-among-top-20-it-outsourcing-destinations-despite-lackings>
- Banglapedia. (2014, July 27). *Banglapedia - the National Encyclopedia of Bangladesh*. <http://en.banglapedia.org/index.php?title=Computer>
- Bose, T. K., Uddin, M. R., & Huda, M. N. (2013). Prospects of Bangladesh as a Leading Outsourcing Destination in IT Sector. *International Journal of Managing Value and Supply Chains*, 4(2), 1–16. <https://doi.org/10.5121/ijmvsc.2013.4201>
- Brown D, Wilson S. 2005. *The Black Book of Outsourcing*. Hoboken, NJ: Wiley
- Cable.co.uk. (2020). *Worldwide Broadband Speed League 2020 / Internet Speed Tests - Cable.co.uk*. Cable. <https://www.cable.co.uk/broadband/speed/worldwide-speed-league/>
- Das, A., Rifat, G., Kumar, D., Habib, A., Ehtesham, A. Z. M., & Shamsur, M. (2018). A Study on Bangladeshi IT freelancers: A Survey. *International Journal of Computer Applications*, 182(32), 38–45. <https://doi.org/10.5120/ijca2018918256>
- Dhaka Tribune. (2017, December 12). Sheikh Hasina Software Park – a state-of-the-art facility in Jessore. *Dhaka Tribune*. <https://www.dhakatribune.com/bangladesh/nation/2017/12/12/sheikh-hasina-software-park-state-art-facility-jessore>
- Dhaka Tribune. (2019, November 29). Bangladesh opens world's 7th largest data centre. *Dhaka Tribune*. <https://www.dhakatribune.com/bangladesh/2019/11/29/bangladesh-becomes-abode-of-world-s-7th-largest-data-centre>
- Dubey, A., Abhinav, K., Hamilton, M., & Kass, A. (2017). Analyzing Gender Pay Gap in Freelancing Marketplace. *Proceedings of the 2017 ACM SIGMIS Conference on Computers and People Research - SIGMIS-CPR '17*, 13–19. <https://doi.org/10.1145/3084381.3084402>
- Ethirajan, B. A. (2011, October 11). Bangladesh unveils \$130 “Doel” laptops. *BBC News*. <https://www.bbc.com/news/world-south-asia-15261076>
- ITU. (2017). *ITU / 2017 Global ICT Development Index*. www.Itu.Int. <https://www.itu.int/net4/ITU-D/idi/2017/index.html>
- Gheorghe, M. (2015). State of Freelancing in IT and Future Trends. *International Journal of Social, Behavioral, Educational, Economic, Business and Industrial Engineering, World Academy of Science, Engineering and Technology*, 9(5), 1474–1478. <https://pdfs.semanticscholar.org/4589/4748ff1e9bafa1df29258604c25b7587a9d0.pdf>
- ICT Division. (2019). *Annual Report 2018-19. ICT Division, Ministry of Post, Telecommunication and Information Technology*.https://ictd.gov.bd/sites/default/files/files/ictd.portal.gov.bd/annual_reports/8788ab2e_23e5_4eb8_8411_768d8bc232a2/Annual%20Publication%202018-2019.pdf
- Heiskala, M., Hiekkonen, K., & Korhonen, J. J. (2011). The impact of information technology enabled services on value co-creation. *Retrieved November, 23, 2012*.
- Hunter, I., Fishback, B. D., Koester, E. A., & Kim, Z. (2012). *U.S. Patent Application No. 13/414,278*.
- McKeown, T. (2015). What's in a Name? The Value of 'Entrepreneurs' Compared to 'Self Employed'... But What about 'Freelancing' or 'IPro'? *International Review of Entrepreneurship*, 13(2), 103–116. https://www.researchgate.net/publication/281490175_What's_in_a_name_The_value_of_'Entrepreneurs'_compared_to_'Self-Employed'but_what_about_'Freelancing'_or_'IPro'
- Mould, O., Vorley, T., & Liu, K. (2014). Invisible creativity? Highlighting the hidden impact of freelancing in London's creative industries. *European Planning Studies*, 22(12), 2436-2455.
- Mustafa, N. (2018, April-June). Bangabandhu Satellite: A Journey To Space. *Bangladesh Quarterly*, Volume 38(4), 10–19.
- Quélin, B., & Duhamel, F. (2003). Bringing together strategic outsourcing and corporate strategy:: Outsourcing motives and risks. *European management journal*, 21(5), 647-661.
- Rahman, M. A., & Rahman, M. M. (2017). Factors, Impacts, Problems and Solutions of Freelance Earning in the context of Bangladesh. *Business & Entrepreneurship Journal, SCIENPRESS Ltd*, 6(1), 1–13. https://www.scienpress.com/journal_focus.asp?main_id=72&Sub_id=IV&Issue=72815
- Shklovski, I., Palen, L., & Sutton, J. (2008, November). Finding community through information and communication technology in disaster response. In *Proceedings of the 2008 ACM conference on Computer supported cooperative work* (pp. 127-136).
- Statista. (2020, November 24). *Internet penetration rate Bangladesh 2010-2019*. <https://www.statista.com/statistics/764102/internet-penetration-rate-bangladesh/>
- Sultana, R., Im, I., & Im, K. S. (2019). Do IT freelancers increase their entrepreneurial behavior and performance by using IT self-efficacy and social capital? Evidence from Bangladesh. *Information & Management*, 56(6), 103133. <https://doi.org/10.1016/j.im.2018.12.001>
- The Daily Star. (2014, September 30). Bangladesh wins WITSA global ICT award. *The Daily Star*. <https://www.thedailystar.net/bangladesh-wins-witsa-global-ict-award-44195>

- The Daily Star. (2015, September 27). BSS, N. Y. Hasina receives 'ICT Sustainable Development Award.' *The Daily Star*. <https://www.thedailystar.net/country/hasina-receives-ict-sustainable-development-award%E2%80%99-148216>
- The Daily Star. (2016, November 23). Bangladesh steps down 2 notches on ICT index. *The Daily Star*. <https://www.thedailystar.net/business/bangladesh-steps-down-2-notches-ict-index-1319368>
- The Daily Star. (2018, February 14). Bangladesh enters 4G era on Feb 19. *The Daily Star*. <https://www.thedailystar.net/frontpage/bangladesh-enters-4g-internet-service-era-on-february-19-2018-1534357>
- The Daily Star. (2019, January 17). Govt to go for third submarine cable. *The Daily Star*. <https://www.thedailystar.net/business/government-decides-for-3rd-submarine-cable-connect-in-bangladesh-1688437#:~:text=Bangladesh%20wants%20to%20be%20a,ME%2DWE%205%20in%202017>
- The Daily Star. (2020, November 26). Bangladeshi freelancers to get fresh credibility through identity card project. *The Daily Star*. <https://www.thedailystar.net/bytes/news/bangladeshi-freelancers-get-fresh-credibility-through-identity-card-project-2001581>
- The Independent. (2017, February 22). 2nd submarine cable connected: BSCCL. *The Independent*. <http://www.theindependentbd.com/printversion/details/81958>
- Turban, E., Rainer, R. K., & Potter, R. E. (2003). Information technology. *Islamic Studies*, 2, 0.
- Uddin, S. (2019, March 5). BHTPA gets ISO certification. *The Financial Express*. <https://www.thefinancialexpress.com.bd/trade/bhtpa-gets-iso-certification-1551760168>
- Yoganarasimhan, H. (2012). The Value of Reputation in an Online Freelance Marketplace. *Marketing Science*, 32(6), 827–1011. <https://doi.org/10.2139/ssrn.2178208>