Inventory of ICT Industry in Nepal
Survey 2024

Data Report

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Government of Nepal
Department of Information Technology

Submitted by:

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List of Abbreviations

AI - Artificial Intelligence

BPO - Business Process Outsourcing

COVID - Coronavirus Disease

ICT - Information and Communication Technology

IoT - Internet of Things

IT - Information Technology

MoCIT- Ministry of Communication and Information Technology

NDA - Non-Disclosure Agreement

NPR - Nepalese Rupee

NSIC - Nepal Standard Industrial Classification

NTA - Nepal Telecommunication Authority

ORMs - Online Research Methods

IIDS - Institute of Integrated Development Studies

IRD - Inland Revenue Department

SEO - Search Engine Optimization

SWOT - Strengths, Weaknesses, Opportunities, and Threats

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Introduction

The Information and Communication Technology (ICT) industry stands as a pivotal force in driving economic growth, innovation, and digitalization globally. ICT is the acquisition, processing, storage, and dissemination of vocal, pictorial, textual, and numerical information by a microelectronics-based combination of computing and telecommunications (Karl, 1961). Nepal is not an exception to this pattern, given its distinct topography and socioeconomic conditions.

Nepal's ICT sector includes a wide range of activities, such as software development, hardware services, telecommunications, and the emerging but rapidly expanding domains of blockchain and artificial intelligence. While hardware vendors and networking companies comply with the demands of digital infrastructure, IT service providers offer a wide range of solutions, such as IT consulting, systems integration, and cloud services. Nepal Telecom and Ncell are key in the telecommunications industry, offering wide-ranging mobile and broadband services nationwide. Companies like Cedar Gate Technologies, CloudFactory, and Dynamic Technosoft are well-known in the software and IT services sectors and provide a variety of solutions, from managed services and IT consulting to software development.

However, the industry is still fragmented despite the advancements, with a combination of larger corporations and small and medium-sized businesses operating in the nation.

The Department of Information Technology, Government of Nepal, has commissioned a detailed ICT Sector inventory study survey for the fiscal year 2080/81 B.S., titled **'Inventory of ICT Industry in Nepal'.** The survey is being implemented by ICT Foundation Nepal under the close supervision of the Department of Information Technology and the Ministry of Information and Communications, Government of Nepal. This inventory aims to compile Nepal's ICT industry data, assess its current status, and understand the landscape of Information and Communication Technology (ICT) companies operating within Nepal. By collecting data on various aspects of these companies, the survey seeks to create a detailed repository of information that can be utilized for research, policymaking, and fostering growth within the ICT sector.

The purpose of the paper is to present a thorough analysis based on a survey intended to inventory Nepal's ICT industry. It aims to identify the leading companies in a range of market sectors, comprehend their operational dynamics concerning recruiting staff and monthly salaries, and investigate the opportunities and problems they have come across. This database will serve as a valuable resource for various stakeholders, including policymakers, researchers, investors, and industry players, facilitating informed decision-making and strategic planning within the ICT sector in Nepal.

Background

The ICT industry in Nepal is rapidly evolving and has become an essential component behind the country's social and economic advancement. The ICT industry has advanced significantly in recent years despite the nation's diverse topography and socioeconomic challenges. This advancement is aided by the increasing penetration and access to the internet, the use of smartphones, and government-led programs that encourage digital literacy and connectivity. These advancements highlight the industry's vital role in improving information availability, streamlining business procedures, and promoting general economic growth.

The Department of Information Technology aimed to oversee IT companies more effectively and assess their potential outcomes, which is why it was pertinent to conduct this research.

The purpose of this study is to address the critical need for an ICT sector inventory in Nepal. The study sought to gather information from thousands of entities across multiple IT and ICT sectors, covering a wide range of the industry. A wide range of businesses involved in software development, hardware distribution, IT services, telecommunications, and emerging technologies like blockchain and artificial intelligence are included in this sample.

Objective

The key objectives of this survey are the following:

- To identify and systematically classify the domains and sectors, the IT companies are serving in Nepal and the Global market.
- To know the human resource composition in IT companies, including their team structures, workforce size, and the skill sets present.
- Analyze the average salary levels for different roles within the ICT industry.
- Explore the capacity and readiness of Nepali ICT companies to expand their operations and services to global markets.
- To identify strengths, weaknesses, opportunities, and threats (SWOT) in the ICT sector.

Methodology

The methodology for the data collection was centered around primary data collection through an electronic survey, designed to ensure comprehensive and accurate insights. The survey form was distributed to a targeted sample of ICT companies across Nepal, focusing on entities involved in software development, telecommunications, IT services, and emerging technologies. Initial details about these companies were gathered through Online Research Methods (ORMs), which included searches of online databases, business directories, and industry-specific portals.

The electronic survey was disseminated through email and online platforms, enabling respondents to easily submit comprehensive details regarding their team configurations, business operations, and activities.

- **Sampling Design**

The snowball sampling design was purposefully done for the study. This method involved initial respondents referring to other relevant ICT companies, the initial respondents assisted in expanding the participant pool by recommending other pertinent ICT companies. This method was crucial in obtaining a representative and varied sample of businesses in the ICT industry.

- **Method of Data Collection**

The data has been collected through an online survey distributed to a targeted sample of ICT companies across Nepal. Respondents were requested to complete a structured questionnaire designed to gather comprehensive information about their company. This included details on business activities, human resource composition, and financial overview. The survey aimed to capture essential data points that provide insights into the structure, workforce, and economic standing of each participating company.

In addition to primary data, secondary data has also been used in this study. Information was gathered from various sources, including the database of the Inland Revenue Department (IRD), the Company Registrar Office, reports by the Institute for Integrated Development Studies (IIDS), and the annual report of the Nepal Telecommunications Authority (NTA), among others.

Furthermore, we have taken a sample size of 302 which is sufficient for population surveys based on Yamane's formula for sample size calculation, which balances precision and practical constraints (Yamane, 1967). Yamane’s formula is widely used in research to determine a sample size that balances statistical precision and practical feasibility, ensuring that the survey results are generalizable to the entire population with an acceptable margin of error.

Explanation of Yamane's Formula
Yamane's formula for determining sample size is: n ≈ N/ 1+N(e2)
where,
n ≈ sample size
N ≈ population size
e ≈ margin of error (taken 0.06 for 6% margin of error)

Calculation,

According to IIDS (2023), there are 7,637 IT companies registered in Nepal with the Company Registrar Office. For a population size *N* of 7,637 and a margin of error *e* of 0.06 (6%):

n ≈ N/ 1+N(e2)

≈ 7637/ 1+7637(0.06*0.06)

≈ 7637/1+7637 (0.0036)

≈ 7637/ 27.49

≈ 278

This demonstrates that for a population of 7,637, a sample of approximately 278 would be adequate, and for populations smaller than this, a sample size of 302 would typically suffice. Thus, it is justifiable that a sample size of 302, meets the desired accuracy level for a given population size and margin of error.

Limitations:

While this survey provides valuable insights into the current situation of the ICT industry in Nepal, it is important to acknowledge its limitations. It does not meet strict statistical representativeness due to the challenges posed by inadequate information on ICT companies, the absence of centralized business registrations, and reliable industry directories in Nepal. Despite these constraints, the survey successfully captures data from more than 300 firms within the ICT sector. Its primary objective remains to furnish essential information that can guide the formulation of effective policies and informed investment decisions aimed at enhancing the ICT business landscape in Nepal.

The survey 'Inventory of ICT Industry in Nepal' faced several limitations that impacted its comprehensiveness and accuracy:

- **Company Policies and Code of Conduct:**

Some companies perceived the survey as a threat to their code of conduct and refused to participate due to their company policies. This resulted in a significant number of denials to the survey thus limiting the number of responses.

- **Credibility and Trust Issues:**

Participants questioned the credibility of the survey and expressed concerns regarding the security and confidentiality of their data. This skepticism led to harsh and uninterested responses, as well as a general unwillingness to fill out the form.

- **Biased Responses:**

There might be a notable bias in the responses received, as some respondents were reluctant to disclose exact numbers and detailed information about their companies. This reluctance stemmed from concerns about privacy and confidentiality.

- **Company Inaccessibility:**

The survey faced challenges in contacting companies due to the unavailability of phone numbers and email addresses on their websites. Additionally, some websites contained incorrect contact information, and many companies did not have websites at all, making it difficult to reach them.

- **Outdated Information:**

Major companies listed online were sometimes found to be already closed, yet their details remained available on the internet. This outdated information hindered the accuracy of the survey data.

- **Time Constraints**:

The survey was conducted under tight time constraints, which limited the ability to follow up thoroughly and ensure comprehensive responses from all targeted companies.

- **Survey Content:**

The survey contained questions that were perceived as breaching company policies or the security of company data. As a result, many respondents were hesitant to provide complete and accurate information.

Ethical Consideration

The privacy and confidentiality of survey participants were of utmost importance to ICT Foundation Nepal and the Department of Information Technology, Government of Nepal. Both organizations are committed to safeguarding the data collected from the survey, ensuring that it remains secure and confidential throughout the entire process. The privacy of participants was held in the highest regard, and rigorous measures were in place to protect their information. The following measures were taken to ensure ethical considerations:

- **Data Security Platform:** KoboToolbox was chosen for its reliable and robust security features, ensuring data protection from unauthorized access and breaches, with detailed security information available on its website.

- **Confidentiality of Data:** ICT Foundation Nepal ensured the utmost confidentiality of collected data, restricting access to authorized personnel and implementing robust measures to maintain data security and integrity throughout storage, analysis, and dissemination.

- **Sensitive Data Handling:** Identifiable information was censored and sensitive data removed to protect participant privacy and ensure anonymity during analysis.

- **Non-Disclosure Agreement (NDA)**: NDAs were signed by all team members who were involved in the process of data collection, data analysis and report writing. This is to ensure that any information, especially the confidential information, received from the companies and the outcome of the analysis of this data, remained within the company and not shared for public disclosure without the due approval from concerned departments.

- **Overall Ethical Commitment**: The ICT Foundation Nepal and the Department of Information Technology, Government of Nepal, demonstrated a strong commitment to ethical research by prioritizing participant privacy, secure data handling, and responsible use of findings, fostering trust and cooperation.

Data Analysis, Presentation and Interpretation

Number of Companies:
Various sources were used to find the number of IT companies in Nepal. lnland Revenue Department, the state-owned institution responsible for collecting taxes and regulating income and expenses of all organizations in Nepal, reported that there are 9,659 IT companies in Nepal (categorized based on the NSIC code). Similarly, the data from the Office of the Company Registrar reported there are 12,383 companies registered as IT companies (both hardware and software).

- **Categories of companies operating within the ICT sector in Nepal.**

The survey aimed to identify and systematically classify the various types of companies operating within the ICT sector in Nepal. The results provided insights into the distribution and frequency of different industry sectors. From 302 respondents, a total of 1,279 responses were received, including 226 from startups and 76 from non-startups, according to this research.

The results provided insights into the distribution and frequency of different industry sectors. Out of all responses received, the most represented sector was Software/Application Development/Services, accounting for 16.2% of the total respondents with companies. This was followed by Web Development & Hosting by 13.1%, IT Support/Consulting services with 142 companies (11.1%), and Digital Marketing/SEO/Branding Services involving 95 companies (7.4%). Other notable sectors included Software Outsourcing (6.8%), E-Commerce (5.6%), IT Enabled Services (4.9%), Academia/IT Training/Education Institutes (4.8%), and Artificial Intelligence/Data Processing/Machine Learning (3.8%).

In addition, sectors like Cloud Services (3.0%), Data Analytics (2.7%), E-Governance Solutions (2.5%), Ed-Tech (2.2%), Fintech (2.0%), Health-Tech (1.9%), and Cybersecurity (1.8%) were also well represented. The survey included smaller but significant representations from sectors like Tourism/Hospitality Technology, Business Process Outsourcing (BPO), Offshore Companies (Service Export), Agri-Tech, Blockchain, and Internet Service Providers/Telecommunication Service Providers. The 'Others' category, encompassing a variety of niche sectors, collectively accounted for 2.8% of the total companies surveyed. This classification provided a comprehensive overview of the ICT sector in Nepal, highlighting the prevalence and diversity of companies within this industry. The responses received under different categories are shown in the table below.

Company Category Frequencies				
	Responses	Percent of Cases		
	N	Percent		
Company Category	Academia/ IT Training/ Education Institute	62	4.8%	20.5%
	/Agri-Tech	16	1.3%	5.3%
	Artificial Intelligence/ Data Processing/ Machine Learning	48	3.8%	15.9%
	Blockchain	10	0.8%	3.3%
	Business Process Outsourcing (BPO)	19	1.5%	6.3%
	Cloud Services	38	3.0%	12.6%
	Cybersecurity	23	1.8%	7.6%
	Data Analytics	35	2.7%	11.6%
	Digital marketing/SEO/Branding Services	95	7.4%	31.5%
	E-Commerce	71	5.6%	23.5%
	E-Governance Solution	32	2.5%	10.6%
	Ed-Tech	28	2.2%	9.3%
	Fintech	26	2.0%	8.6%
	Health-Tech	24	1.9%	7.9%
	Internet Service Provider (ISP)/ Telecommunication Service Provider	10	0.8%	3.3%
	IT Enabled Service (ITES)	63	4.9%	20.9%
	IT Support / Consulting	142	11.1%	47.0%
	Offshore Company (Service Export)	17	1.3%	5.6%
	Smart Energy	2	0.2%	0.7%
	Software / Application Development / Services	207	16.2%	68.5%
	Software Outsourcing	87	6.8%	28.8%
	Tourism / Hospitality Technology	21	1.6%	7.0%
	Web Development & Hosting	167	13.1%	55.3%
	Others	36	2.8%	11.9%
Total	**1279**	**100.0%**	**423.5 %**	

Table 1: Categories of companies operating within the ICT sector in Nepal.

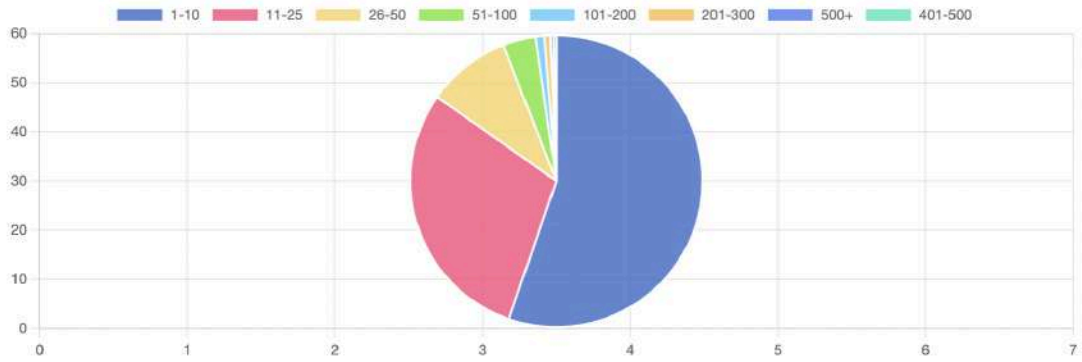
- **Human resource composition of ICT companies, including team structures, workforce size, and the skill sets present**

The survey aimed to gather information on the total human resource/team size of organizations operating within the ICT sector in Nepal. The results indicated a varied distribution of team sizes among the respondents. The majority of the organizations, 167 in total, reported having a team size of 1-10 members, representing 55.3% of the respondents. This was followed by 89 organizations (29.47%) with team sizes ranging from 11-25 members. Organizations with team sizes of 26-50 members accounted for 9.27% with 28 respondents.

Smaller proportions of organizations reported larger team sizes: 11 organizations (3.64%) had 51-100 members, 3 organizations (0.99%) had 101-200 members, and 2 organizations (0.66%) had 201-300 members. Additionally, there was one organization each reporting team size of 401-500 members (0.33%) and over 500 members (0.33%). In total, 302 respondents provided insights into the team sizes within their organizations, illustrating the diverse range of human resources across the ICT sector in Nepal.

Please mention the total human resource/team size of your Organization.

TYPE: SELECT_ONE. 302 out of 302 respondents answered this question. (0 were without data.)



Value	Frequency	Percentage
1-10	167	55.3
11-25	89	29.47
26-50	28	9.27
51-100	11	3.64
101-200	3	0.99
201-300	2	0.66
500+	1	0.33
401-500	1	0.33

Figure 2: HR composition of ICT companies, including team structures, workforce size, and the skill sets present

- **Analyze the average salary levels for different roles within the ICT industry.**

The survey collected data on the average monthly salary of employees within organizations in the ICT sector in Nepal, with the responses highlighting a range of salary brackets (reported in Nepali Rupees). The most common salary range reported was NRs. 25,000 - 40,000, with 100 organizations (33.11%) falling into this category. Close behind, 94 organizations (31.13%) indicated that their employees earned between Rs 17,500 - 25,000 per month.

Further analysis showed that 57 organizations (18.87%) offered average monthly salaries in the range of Rs 40,000 - 55,000, while 34 organizations (11.26%) reported salaries between Rs 55,000 - 70,000. A smaller proportion of organizations paid higher salaries: 9 organizations (2.98%) reported average monthly salaries of Rs 70,000 - 85,000, 5 organizations (1.66%) fell within the Rs 85,000 - 1,00,000 range, and 2 organizations (0.66%) paid Rs 1,00,000 - 1,50,000. Only one organization (0.33%) indicated an average monthly salary of Rs 1,50,000 - 2,00,000. These figures, gathered from 302 respondents, reflect the diverse salary structures within Nepal's ICT sector. The report also shows that the average salary of employees in Nepal is on the lower end.

Value	Frequency	Percentage
25,000 - 40,000	100	33.11
17,500 - 25,000	94	31.13
40,000 - 55,000	57	18.87
55,000 - 70,000	34	11.26
70,000 - 85,000	9	2.98
85,000 - 1,00,000	5	1.66
1,00,000 - 1,50,000	2	0.66
1,50,000 - 2,00,000	1	0.33

Figure 3: Average monthly salary of the employees (in NPR)

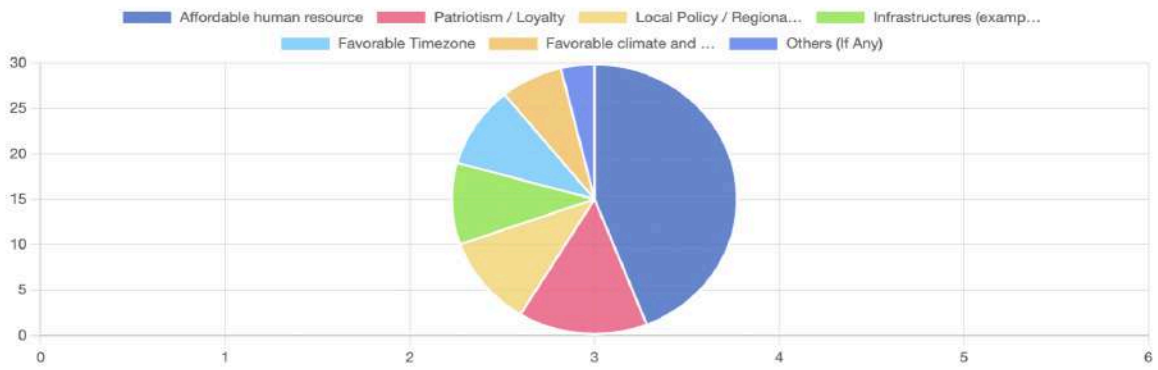
- **Explore the capacity and readiness of Nepali ICT companies to expand their operations and services to international markets.**

The survey asked respondents if they were considering expanding their organization by opening a branch in an international market or country. The results indicated that the majority of respondents, 194 organizations (65.32%), were not considering international expansion. However, 103 organizations (34.68%) expressed interest in expanding internationally.

Those respondents who expressed interest in expanding their organization internationally mentioned several countries prominently. The most frequently mentioned ones were the USA (United States of America), Australia, India, UAE (United Arab Emirates), and the UK (United Kingdom). Additionally, countries such as Canada, Japan, Germany, China, and Singapore were also cited as potential locations for expanding their business operations. These countries represent a diverse range of global markets that respondents are considering for their organizational expansion.

What are the factors influencing work being outsourced to Nepal from foreign countries?

TYPE: SELECT_MULTIPLE. 104 out of 302 respondents answered this question. (198 were without data.)



Value	Frequency	Percentage
Affordable human resource	81	26.82
Patriotism / Loyalty	27	8.94
Local Policy / Regional Regulations / Community Guidelines	20	6.62
Infrastructures (example Internet, Electricity availability) / Facilities / Physical Structures	18	5.96
Favorable Timezone	18	5.96
Favorable climate and weather	13	4.3
Others (If Any)	7	2.32

Mention Others

TYPE: TEXT 6 out of 311 respondents answered this question. (305 were without data.)

Value	Frequency	Percentage
Good Quality Product at a lower prices compared to foreign solutions.	1	0.32
legally and system official not good in Nepal.	1	0.32
Quality	1	0.32
Reliable Work in low cost	1	0.32
Teams Capability and Founders Effort	1	0.32
ADVANCED TECHNOLOGY	1	0.32

Figure 4: Factors influencing work being outsourced to Nepal from other countries.

- **Identify the strengths, weaknesses, opportunities, and threats (SWOT) in the ICT sector.**

Nepal's ICT sector is positioned for growth supported by government initiatives and increasing international engagement. However, challenges in infrastructure, regulations, and skills need attention to sustain competitiveness. Mentioned below, SWOT analysis highlights key areas for strategic focus to harness Nepal's ICT sector's potential for sustainable development and global competitiveness.

Strengths:

1. **Skilled Workforce:** Nepal boasts a proficient pool of IT professionals adept in software development, IT consulting, and digital marketing.
2. **Emerging Technologies:** Rapid adoption of AI, blockchain, and data analytics offers avenues for innovation and specialization.
3. **Government Support:** Policies like the "Digital Nepal Framework" and startup incentives to strengthen industry growth.
4. **Growing Connectivity:** Expanded internet and mobile access drive widespread ICT adoption across the country.

Weaknesses:

1. **Infrastructure Challenges:** Limited physical and digital infrastructure in remote areas hampers ICT deployment.
2. **Regulatory Constraints:** Complex regulatory frameworks and bureaucratic processes hinder business operations and innovation.

3. **Skills Gap:** Disparities in ICT skill levels and training opportunities affect industry competitiveness.

Opportunities:

1. **International Market Expansion:** Increasing interest from Nepali ICT firms to expand globally offers opportunities for revenue diversification and collaboration.
2. **Digital Transformation:** Rising demand for digital solutions in sectors like e-commerce, fintech, and e-governance opens avenues for specialized services.
3. **Outsourcing Destination:** Competitive labor costs and improving ICT capabilities position Nepal as an attractive outsourcing hub.

Threats:

1. **Global Competition:** Intense competition from established IT hubs and emerging economies challenges Nepal's ICT companies in global markets.
2. **Cybersecurity Risks:** Heightened digitalization increases vulnerability to cybersecurity threats and data breaches.
3. **Economic Instability:** Political uncertainties and economic volatility in Nepal could impact investor confidence and industry growth.

Results and Findings

- **Market analysis and size estimation**

The Information and Communication Technology (ICT) sector in Nepal has seen significant growth in recent years, driven by an increasing demand for digital services and the expansion of internet connectivity across the country. According to the Inland Revenue Department (IRD), 9,659 IT companies are registered in Nepal, categorized based on the Nepal Standard Industrial Classification (NSIC) code. This number slightly contrasts with the data from IIDS, (2023), which reports 7,637 IT companies registered with the Company Registrar Office. This difference highlights the dynamic nature of the sector and suggests potential gaps in registration and reporting processes.

The ICT market in Nepal is characterized by a diverse range of services, including software development, IT consulting, digital marketing, and telecommunications. The rapid growth of startups and non-startups indicates a vibrant entrepreneurial ecosystem, which is increasingly contributing to the national economy. Opportunities in the ICT sector are vast, with significant potential in areas such as e-commerce, fintech, e-governance, and mobile applications. The government's emphasis on digital transformation and initiatives like the "Digital Nepal Framework" further underscores the sector's importance and its promising future.

Given the growing demand for IT services and the supportive policy environment, the ICT sector in Nepal offers substantial opportunities for investment and innovation. Companies operating in this sector can benefit from the expanding market, increasing internet penetration, and a young, tech-enthusiast population. The existing infrastructure, coupled with government initiatives, provides a solid foundation for further growth and development. As the sector continues to evolve, it is expected to play a crucial role in driving economic progress and enhancing the country's global competitiveness.

- **Technology landscape, including emerging trends**

The IT and ICT sectors in Nepal are leveraging a diverse array of technologies to drive innovation and meet market demands. The most prevalent technologies include PHP, used by 78 respondents, and Python, with 77 users, highlighting their dominance in web development and data science. DotNet and React follow closely with 46 and 45 users respectively, underscoring their importance in building robust, scalable applications. Other programming languages such as Golang, C, and C# are also in use, with 44 respondents indicating their utilization. Next JS and a variety of other technologies like OS, MEAN stack, and Swift are employed by 35 respondents each, reflecting the varied technical landscape in the sector.

Emerging trends reveal a significant adoption of modern frameworks and tools aimed at enhancing productivity and creating sophisticated user experiences. Flutter is used by 34 respondents for cross-platform mobile development, while Laravel, utilized by 25 respondents, remains a popular PHP framework. WordPress and JavaScript, each with 22 users, continue to be vital for content management and web development. Additionally, Java and graphics designing tools such as Adobe Photoshop and Canva are reported by 21 respondents each. The adoption of VUEJS (19 users), cloud services like AWS and Azure (13 users), and video editing tools such as Adobe AfterEffects and Premiere Pro (13 users) further illustrate the sector's technological diversity.

Database technologies, including SQL and NoSQL, are in use by 12 respondents, and essential web technologies like HTML and UI/UX design tools are employed by 10 users each. Productivity tools and frameworks like the MERN stack (8 users), e-commerce tools (5 users), and machine learning and artificial intelligence tools (4 users) are also part of the technological landscape. These trends not only reflect the current state of technology use in Nepal's ICT sector but also highlight the growing emphasis on leveraging advanced tools and frameworks to drive innovation and efficiency in the industry.

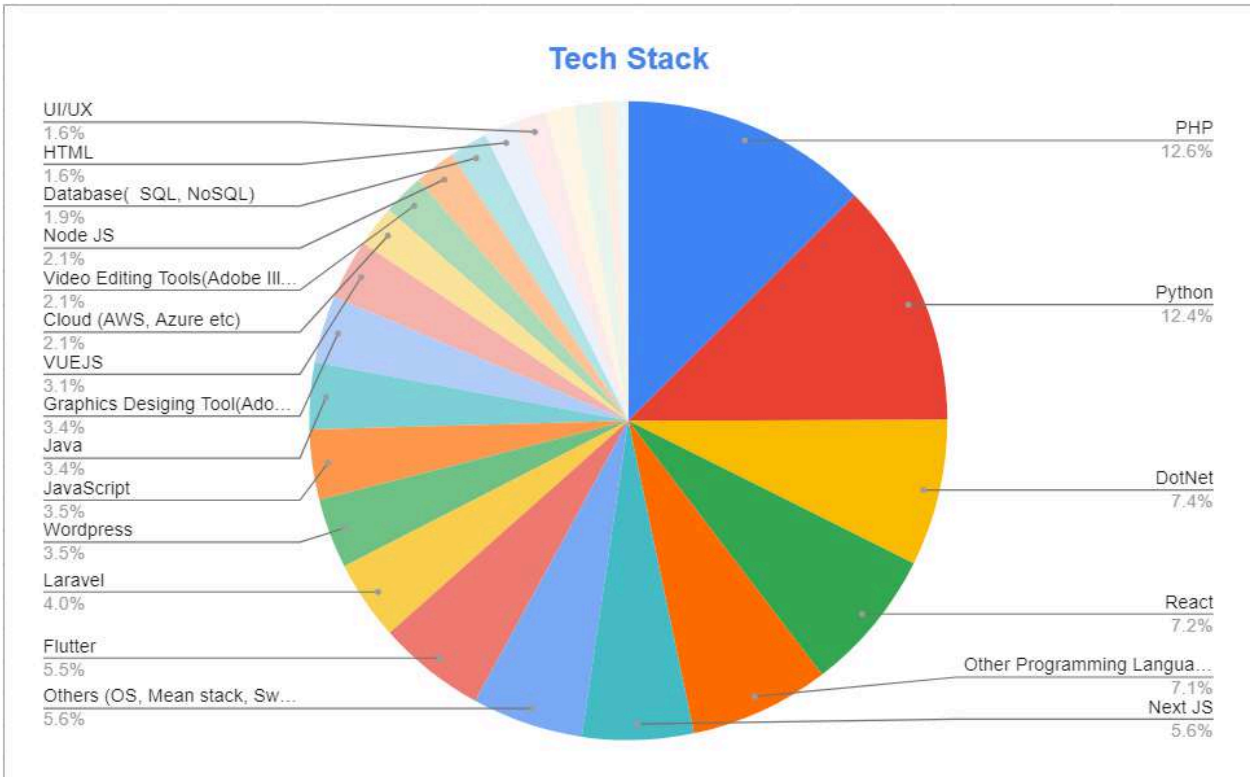


Figure 5: Technological landscape indication

With this, the emerging technology trends from the research shows Artificial Intelligence (AI) remains a frontrunner, revolutionizing applications such as machine learning, chatbots, and robotic process automation (RPA). UAVs (drones) are increasingly pivotal for surveying and mapping, offering efficient solutions. Semiconductor design, particularly in AI-focused chips, continues to push technological boundaries. The Internet of Things (IoT) is enhancing connectivity and data analytics, while blockchain technology expands beyond cryptocurrencies into AI and IoT applications. Additionally, Web3 is emerging as a decentralized paradigm for blockchain-based applications, promising new avenues for innovation and collaboration in the digital space. These trends underscore the dynamic landscape of technological advancement and its profound impact on diverse sectors.

- **Key players, stakeholders, and their contributions.**

The IT/ICT sectors in Nepal have witnessed remarkable growth, driven by key players and stakeholders who contribute significantly to the nation's economic and technological landscape. According to Nepal's Startup Policy, 2080 BS, companies established less than ten years ago are classified as startups, while those over ten years are considered non-startups. As per the received data, there are 226 startups and 76 non-startups. Few of the prominent key players identified in the research include Inficare Pvt. Ltd., FlexTecs Nepal, NeoSoftware P Ltd, Cedar Gate Services Private Limited, Wise Yak Solutions Private Limited, Dynamic Technosoft Private Limited, etc.

These companies are at the forefront of innovation and development in the IT/ICT sectors in Nepal.
The contributions of various IT/ICT companies in Nepal are substantial and multifaceted. These companies are not only advancing technological capabilities within the country but also playing a pivotal role in exporting goods and services internationally. This export activity is crucial as it strengthens Nepal's economic foundation by generating foreign exchange and enhancing the nation's trade balance. Additionally, these companies are instrumental in developing human resources by providing specialized training and career opportunities, thereby creating a skilled workforce. This, in turn, has led to the creation of numerous employment opportunities, reducing unemployment and boosting the overall economic growth of Nepal.

All in all, the IT/ICT sectors in Nepal, strengthened by both startups and established firms, are essential to the country's progress. The strategic contributions of key players and the broader industry have not only propelled technological advancements but have also significantly impacted economic stability and employment. As these sectors continue to evolve, their role in shaping Nepal's future remains indispensable, promising sustained growth and development in the years to come.

- **Regulatory framework and policy environment**

The regulatory framework for the Information and Communication Technology (ICT) sector in Nepal is shaped by various governmental policies and initiatives aimed at fostering growth and innovation. The government has established several regulatory bodies and frameworks to oversee the ICT sector, including the Ministry of Communication and Information Technology (MoCIT) and the Nepal Telecommunications Authority (NTA). These bodies are responsible for developing and enforcing regulations that ensure the stability and predictability necessary for attracting investment and encouraging business development. The Digital Nepal Framework, launched in 2019, is one such initiative designed to harness digital technology for economic growth and development across multiple sectors, including education, health, agriculture, and energy (Nepal Telecommunications Authority, 2080).

In terms of policy support for startups, and other ICT-related sectors, the government has introduced several measures to create a favorable environment for innovation and entrepreneurship. By putting several important strategies into practice, Nepal's Startup Policy 2080 prioritizes the development of a favorable environment for new businesses (Nepal Startups Policy, 2080). The government is putting institutional, legal, and infrastructure frameworks in place with the goal of developing a favorable digital ecosystem. Similarly, the e-commerce sector has been bolstered by policies that promote digital transactions and consumer protection

online. However, the regulatory environment still faces challenges, including the need for more streamlined procedures and greater transparency in the implementation of policies.

Based on our research, several recommendations have emerged for enhancing the policy framework of Nepal's ICT sector. Few are as follows:

- There is a need for the government to develop and enforce clear ICT policies to create a predictable and stable environment for investors and businesses. This includes facilitating market access for Nepali ICT products and services through trade agreements and export promotion initiatives.
- Ensuring transparency and efficiency in regulatory bodies and processes is also crucial to building trust and encouraging participation from both local and international stakeholders.
- Providing funding, mentorship, and incubation programs for startups can drive innovation and contribute to the overall growth of the ICT sector.

By implementing these recommendations, Nepal can better position itself as a competitive player in the global digital economy.

- **Evaluation of infrastructure, connectivity, and access.**

The MIS Report (2080) by NTA provides essential data on the state of infrastructure, connectivity, and access within Nepal's ICT sector. The report highlights that voice telephony services have a substantial reach, with a total of 35,232,524 subscriptions. This includes 354,070 fixed PSTN, 21,923,405 GSM/IMT mobile, and 34,875,468 CDMA subscriptions, noting that CDMA services were phased out by Nepal Telecom from Shrawan 2080. The market proportion of voice services shows a clear dominance of mobile services at 98.99%, with fixed services at 1.00% and GMPCS at a mere 0.01%.

Internet service subscriptions reveal a robust uptake in broadband services, with a total of 42,343,373 subscriptions. This includes 14,236,000 fixed broadband (wired), 44,185 fixed broadband (wireless), and 28,063,188 mobile broadband subscriptions. The market proportion of data services indicates that mobile broadband holds a significant share at 66.28%, with fixed broadband (wired) at 33.62% and fixed broadband (wireless) at 0.10%. The population penetration rates for these services are also noteworthy, with mobile broadband at 95.81%, fixed broadband (wired) at 48.60%, and fixed broadband (wireless) at 0.15%, culminating in a total penetration rate of 144.56%.

These figures underscore the growth and development of ICT infrastructure in Nepal, promoting greater connectivity and digital inclusion. However, despite the significant penetration of mobile broadband services, the connectivity remains slow and costly. This indicates a pressing need for improvements in connectivity to provide better service quality. Enhancing infrastructure,

reducing costs, and increasing access to high-speed internet are essential steps to ensure that the ICT sector can support the country's economic and social development effectively.

- **Evaluation of international cooperation and trade in the ICT sector.**

International cooperation and trade have become pivotal in Nepal's rapidly growing ICT sector. According to the Institute for Integrated Development Studies (IIDS, 2023), a substantial portion of ICT companies, 75.3%, are solely registered within Nepal, while 24.7% have registrations both domestically and internationally. These firms mainly focus on exporting services such as programming, coding, design, software development, and testing. A significant 58.3% of these companies frequently receive export assignments, with 28.4% reporting smooth operations and 12.3% experiencing occasional assignments.

The IT service export industry in Nepal has seen impressive growth, valued at approximately USD 515 million. This surge is supported by over 106 IT export services companies, alongside 14,728 IT freelancers in software development and technology, and 51,781 IT-enabled services freelancers who export IT services through digital platforms. In 2022, the total IT service exports reached USD 515 million, representing a remarkable 64.2% growth since 2021.

Besides all, the data received from research shows that the majority of the products and services are provided predominantly in the USA, Japan, India, and Nepal. Other countries where services exported include France, Belgium, UAE, Australia, Bangladesh, Kenya, Switzerland, Bhutan, Myanmar, Sri Lanka, Thailand, Zimbabwe, Canada, Portugal, Nigeria, Germany, Singapore, Bulgaria, Norway, Ireland, Poland, Saudi Arabia, Kuwait, Qatar, United Kingdom, Benin, Malaysia, Namibia, Spain, America, Finland, Brazil, Hong Kong, Indonesia, South Korea, Philippines, South Africa, Romania, Israel, Cambodia, Congo, Morocco, and others globally.

Furthermore, the types of products and services exported include Software Development, Web Design/Development, IT Support/Consulting, Software Testing and Quality Assurance, E-commerce Services, Graphic Design and Multimedia Services, Content Writing and Digital Marketing, Software Licensing Solutions, Cloud Services, Courses and Training Services, and Customer Support and Call Center Services.

Other services include Cyber Security Consultation, GIS Mapping, Mobile Games, Hardware Design, Data Analytics, AI-based Services, ERP, Digital Marketing, IoT-based Services, VFX and 3D Animation, and UI/UX Design.

These developments highlight the critical role of international cooperation and trade in driving the expansion and global integration of Nepal's ICT sector, significantly contributing to the nation's economic progress.

- **Projection of future trends in the ICT industry**

The ICT industry is poised for significant transformation, marked by advancements in AI, cloud computing, and cybersecurity. Human resources will see a rise in demand for highly skilled tech professionals, pushing salaries upwards. Financial ecosystems will increasingly favor tech startups, attracting more investments and fostering innovation. These trends indicate a robust growth trajectory driven by technological integration, a skilled workforce, and a supportive financial environment.

Various sources report differing numbers of IT companies in Nepal: the Inland Revenue Department cites 9,659 companies, while the Office of the Company Registrar lists 12,383. The sector is diverse, with significant representation in software development (16.2%), web development (13.1%), and IT support (11.1%). Human resources predominantly consist of small teams, with 55.3% having 1-10 members. Salary levels range mainly between NPR 25,000-40,000 per month. A notable 34.68% of companies express interest in international expansion, primarily targeting the USA, Australia, and India.

Furthermore, the ICT industry is experiencing rapid evolution because of advancements in AI, machine learning, cloud computing, and IoT. These technologies are enhancing automation, decision-making, and creating interconnected environments across sectors such as healthcare and agriculture. Cybersecurity remains a critical focus, driving significant investments in advanced security measures and real-time threat detection to protect sensitive data.

The industry faces a high demand for skilled professionals, particularly in AI, data science, cybersecurity, and cloud computing. This demand is being met through competitive salaries, flexible work conditions, and continuous learning opportunities. Additionally, robust investment from venture capitalists and private equity firms supports research and development, fostering an innovative ecosystem. Nepal's ICT sector, characterized by numerous small enterprises, reflects a vibrant startup culture. Despite challenges like regulatory inconsistencies, the sector shows promise with opportunities in international markets, driven by young, tech-enthusiast people.

Policy Recommendation:

The ICT industry in Nepal is rapidly evolving, driven by increasing demand for digital solutions across various sectors. However, the industry faces challenges such as regulatory inconsistencies, limited infrastructure, and a shortage of highly skilled professionals. Thus, following policy recommendations would be crucial and effective to leverage the sector's strength.

1. **Tax Incentives and Financial Support**:
   - Implement tax breaks, grants, and subsidies for ICT startups and companies.

- Offer tax exemptions for ICT businesses for a specified period to allow growth.
- Provide low-interest loans and collateral-free funding options for ICT startups.

2. **Infrastructure Development**:
   - Prioritize investment in digital infrastructure, including high-speed internet and broadband connectivity.
   - Develop local data centers, cloud services, and robust telecommunications networks.
   - Establish technology parks and innovation hubs with state-of-the-art facilities.

3. **Education and Skill Development**:
   - Integrate ICT and digital literacy into the national education curriculum at all levels.
   - Promote vocational training programs and specialized ICT training centers.
   - Partner with global ICT companies for advanced training programs and certifications.

4. **Regulatory Framework and Legal Reforms**:
   - Simplify regulations and streamline business registration processes for ICT companies.
   - Establish strong cybersecurity and data privacy laws to protect digital infrastructure and build trust.
   - Develop a conducive legal framework for e-commerce and digital transactions.

5. **Support for Innovation and Startups**:
   - Create government-backed incubators, accelerators, and innovation hubs to support startups.
   - Provide financial incentives, grants, and simplified regulatory procedures to encourage innovation and entrepreneurship.
   - Facilitate access to capital for ICT startups through venture capital funds and other financial resources.

6. **Public-Private Collaboration and International Engagement**:
   - Encourage collaboration between the government, private sector, and international organizations for joint ICT projects.
   - Foster international partnerships to enhance knowledge transfer, investment, and market opportunities.
   - Promote ICT exports and facilitate access to global markets.

7. **Digital Literacy and Inclusion**:
   - Implement nationwide digital literacy programs to empower citizens with essential digital skills.
   - Promote digital inclusion, especially in underserved and rural areas, to ensure widespread access to digital services.

- Support initiatives to bridge the digital divide and enhance digital skills across all communities.

8. **Policy Stability and Transparency**:
   - Ensure clear, consistent, and sustainable ICT policies.
   - Implement transparent processes for regulatory compliance and business operations.
   - Enhance government services through digital transformation to reduce corruption and improve efficiency.

Conclusion:

The Information and Communication Technology (ICT) sector in Nepal is increasingly becoming a cornerstone for the nation's economic and technological advancement. The ICT industry, encompassing a broad spectrum of activities such as software development, hardware services, telecommunications, and emerging fields like blockchain and artificial intelligence, has been identified as a critical driver of digitalization and innovation. Despite the geographical and socioeconomic challenges, Nepal's ICT sector has shown remarkable growth, supported by a rise in internet penetration, smartphone usage, and government initiatives promoting digital literacy and connectivity. The survey titled 'Inventory of ICT Industry in Nepal' conducted by ICT Foundation Nepal, under the guidance of the Department of Information Technology, Government of Nepal, aimed to provide a comprehensive overview of the current status of the ICT industry in Nepal.

The findings of the survey revealed a diverse ICT landscape with varying company sizes and specialties, reflecting both strengths and fragmentation within the sector. Notably, software/application development emerged as the most prominent sector, followed by web development, IT support, and digital marketing. This sectoral distribution highlights the industry's versatility but also its need for better integration and cooperation. Human resources within these companies varied significantly, with the majority being small teams of 1-10 members, illustrating a reliance on compact, agile teams. Salary structures across these firms also showed a broad range, with most employees earning between Rs 25,000 - 40,000 monthly, indicating a balanced but evolving compensation landscape in response to the growing demand for skilled IT professionals.

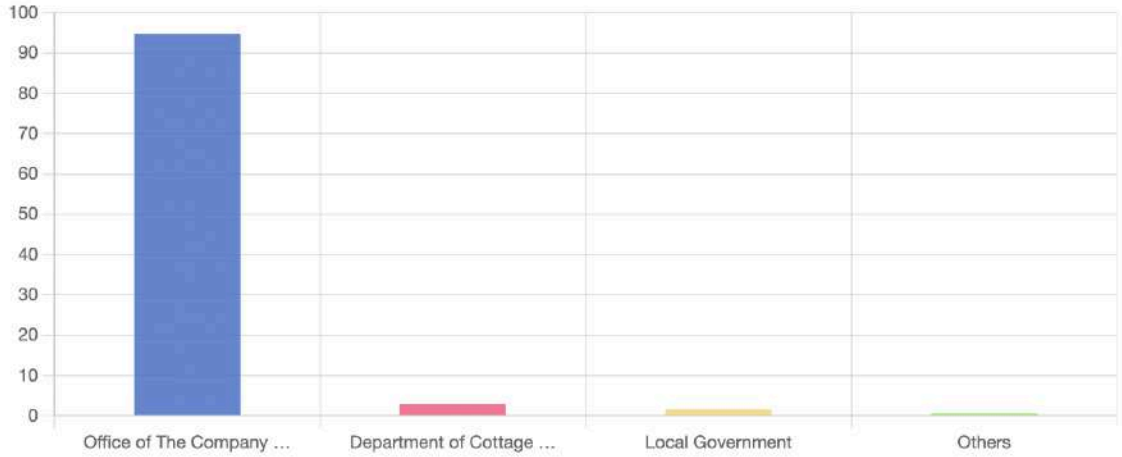
Furthermore, the survey underscored an emerging interest in international expansion among Nepali ICT companies. While a majority are currently focused on the domestic market, a significant proportion of firms are exploring opportunities in global markets such as the USA, Australia, and India. This interest in international expansion reflects the industry's ambition to scale operations and integrate into the global digital economy. However, the survey also highlighted challenges such as data confidentiality concerns, biased responses, and limitations in

accessing comprehensive company information, which need to be addressed to foster a more cohesive and competitive ICT environment in Nepal. The insights gained from this survey will be invaluable for stakeholders aiming to enhance policy frameworks, drive investment, and support the sustainable growth of Nepal's ICT sector.

Appendices:

Where is your Organization Registered with?

TYPE: SELECT_ONE. 302 out of 302 respondents answered this question. (0 were without data.)



Value	Frequency	Percentage
Office of The Company Registrar	286	94.7
Department of Cottage and Small Industries	9	2.98
Local Government	5	1.66
Others	2	0.66

Please mention the Organization / Department you are Registered With.

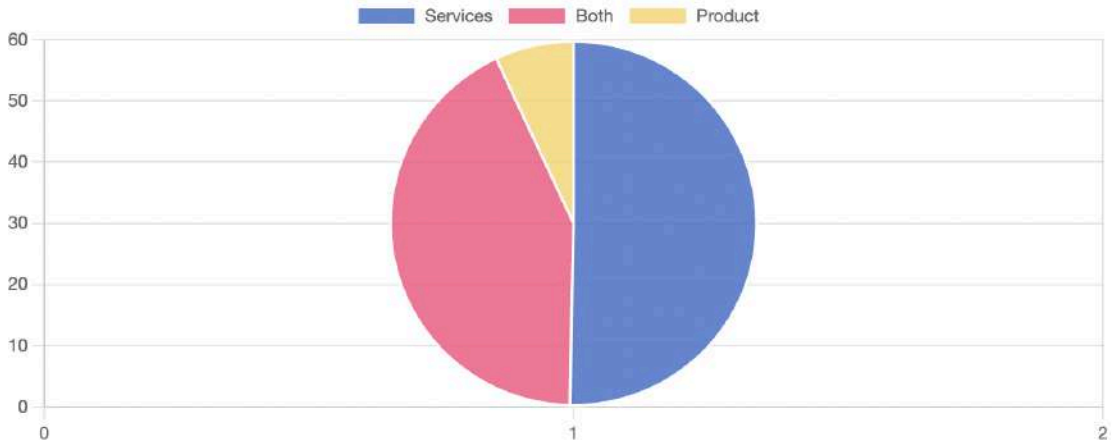
TYPE: TEXT. 1 out of 311 respondents answered this question. (310 were without data.)

Value	Frequency	Percentage
District Administration Office	1	0.32

Figure 6: Registration of the company

Does the Company offer Products and/or Services?

TYPE: SELECT_ONE. 302 out of 302 respondents answered this question. (0 were without data.)

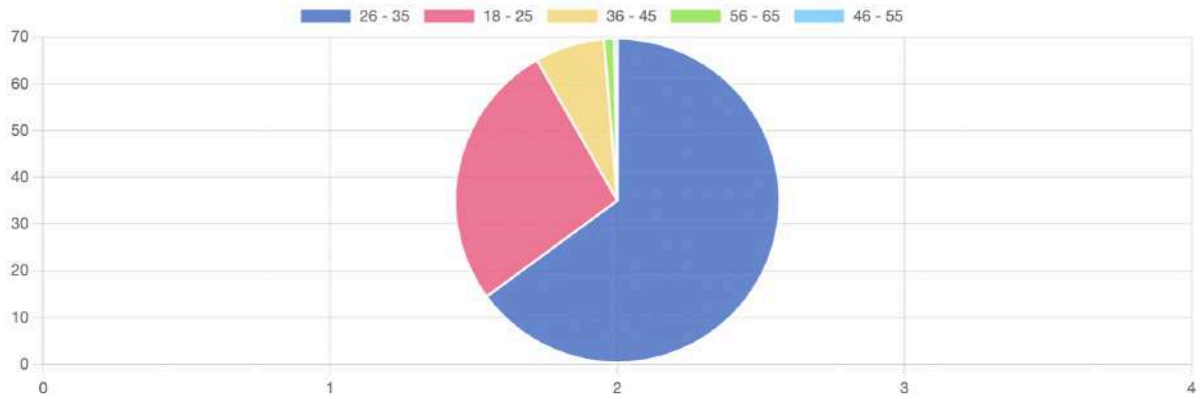


Value	Frequency	Percentage
Services	152	50.33
Both	129	42.72
Product	21	6.95

Figure 7: Company offering Products and/or Services

What is the average age of the employees working in your Organization?

TYPE: SELECT_ONE. 302 out of 302 respondents answered this question. (0 were without data.)

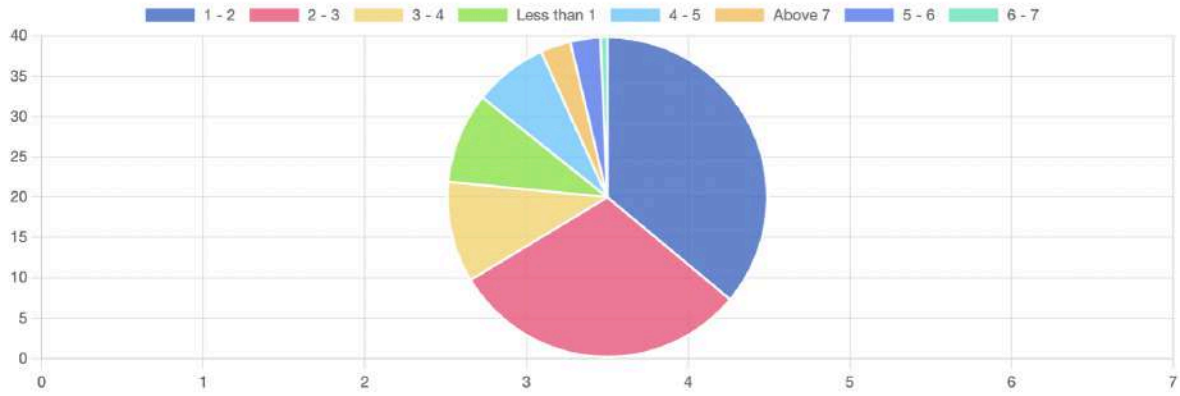


Value	Frequency	Percentage
26 - 35	196	64.9
18 - 25	81	26.82
36 - 45	21	6.95
56 - 65	3	0.99
46 - 55	1	0.33

Figure 8: Average age of the employees working in the company

What is the average length of employment for your employees at your Organization?

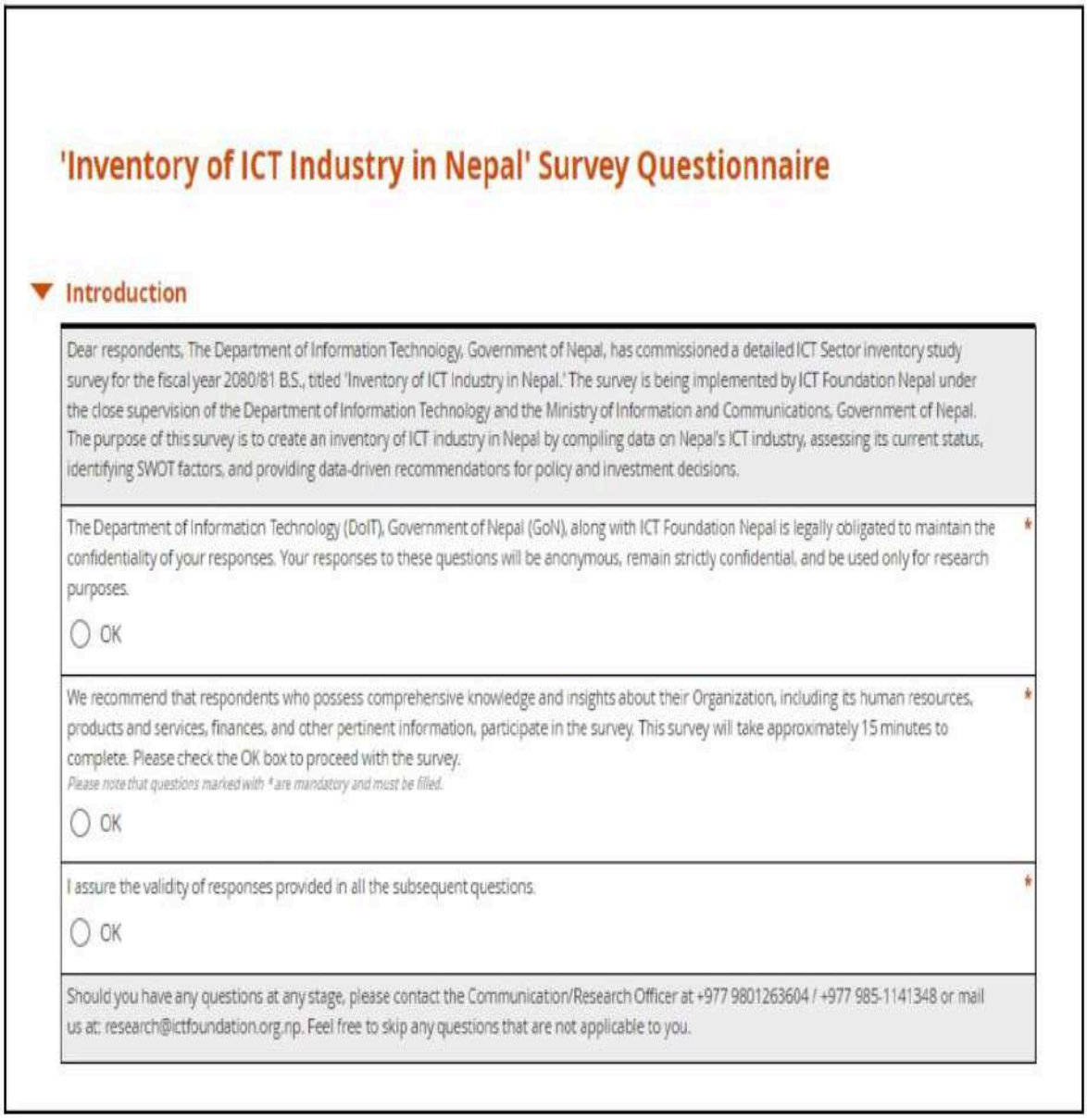
TYPE: SELECT_ONE. 294 out of 302 respondents answered this question. (8 were without data.)



Value	Frequency	Percentage
1 - 2	106	35.1
2 - 3	89	29.47
3 - 4	30	9.93
Less than 1	27	8.94
4 - 5	22	7.28
Above 7	9	2.98
5 - 6	9	2.98
6 - 7	2	0.66

Figure 9: The average tenure of employees within the organization

Inventory of ICT Industry in Nepal' Survey Questionnaire



'Inventory of ICT Industry in Nepal' Survey Questionnaire

▼ Introduction

Dear respondents, The Department of Information Technology, Government of Nepal, has commissioned a detailed ICT Sector inventory study survey for the fiscal year 2080/81 B.S., titled 'Inventory of ICT Industry in Nepal.' The survey is being implemented by ICT Foundation Nepal under the close supervision of the Department of Information Technology and the Ministry of Information and Communications, Government of Nepal. The purpose of this survey is to create an inventory of ICT industry in Nepal by compiling data on Nepal's ICT industry, assessing its current status, identifying SWOT factors, and providing data-driven recommendations for policy and investment decisions.

The Department of Information Technology (DoIT), Government of Nepal (GoN), along with ICT Foundation Nepal is legally obligated to maintain the confidentiality of your responses. Your responses to these questions will be anonymous, remain strictly confidential, and be used only for research purposes. *

◯ OK

We recommend that respondents who possess comprehensive knowledge and insights about their Organization, including its human resources, products and services, finances, and other pertinent information, participate in the survey. This survey will take approximately 15 minutes to complete. Please check the OK box to proceed with the survey. *

*Please note that questions marked with * are mandatory and must be filled.*

◯ OK

I assure the validity of responses provided in all the subsequent questions. *

◯ OK

Should you have any questions at any stage, please contact the Communication/Research Officer at +977 9801263604 / +977 985-1141348 or mail us at: research@ictfoundation.org.np. Feel free to skip any questions that are not applicable to you.

Figure 10 : Disseminated Questionnaire

Company Legal Details

This section will include official details such as the Legal Name of the Organization, Company, Industry Sector, Registered Address, Founder's Name, Company Registration Number, PAN Number, and Company Type etc.

What is the Legal Name of your Organization? *

Is the Business Name same as the Legal Name of the Organization? *

- ○ Yes
- ○ No

To which Industry Sector does your Organization belong to? *

Please tick multiple boxes if applicable

- ☐ Academia/ IT Training/ Education Institute
- ☐ Agri-Tech
- ☐ Artificial Intelligence/ Data Processing/ Machine Learning
- ☐ Blockchain
- ☐ Business Process Outsourcing (BPO)
- ☐ Cloud Services
- ☐ Cybersecurity
- ☐ Data Analytics
- ☐ Digital marketing/SEO/Branding Services
- ☐ E-Commerce
- ☐ E-Governance Solution
- ☐ Ed-Tech
- ☐ Fintech
- ☐ Health-Tech
- ☐ Internet Service Provider (ISP) / Telecommunication Service Provider
- ☐ IT Enabled Service (ITES)
- ☐ IT Support / Consulting
- ☐ Knowledge Process Outsourcing (KPO)
- ☐ Offshore Company (Service Export)
- ☐ Smart Energy
- ☐ Software / Application Development / Services
- ☐ Software Outsourcing
- ☐ Tourism / Hospitality Technology
- ☐ Web Development & Hosting
- ☐ Others

Registered Address: *

Legal registered address of the company

Figure 11 : Disseminated Questionnaire

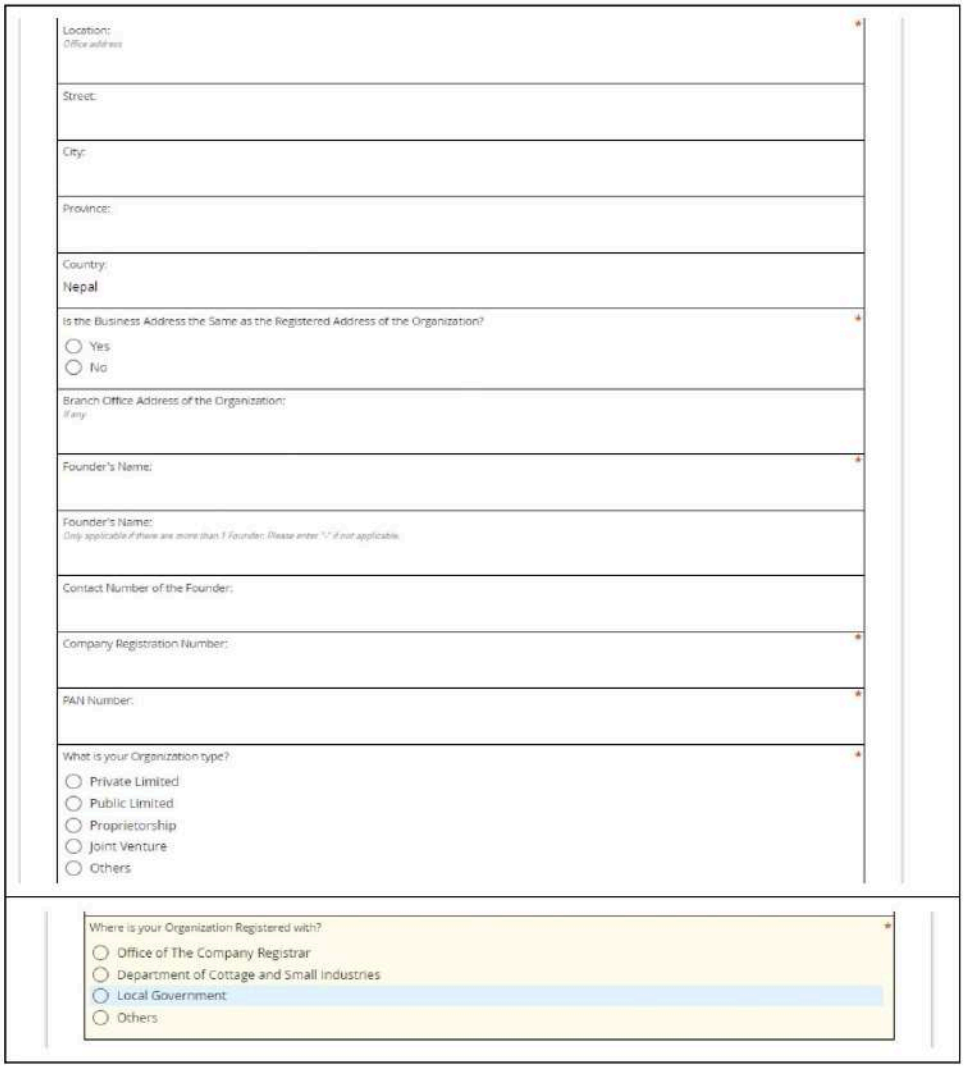


Figure 12: Disseminated Questionnaire

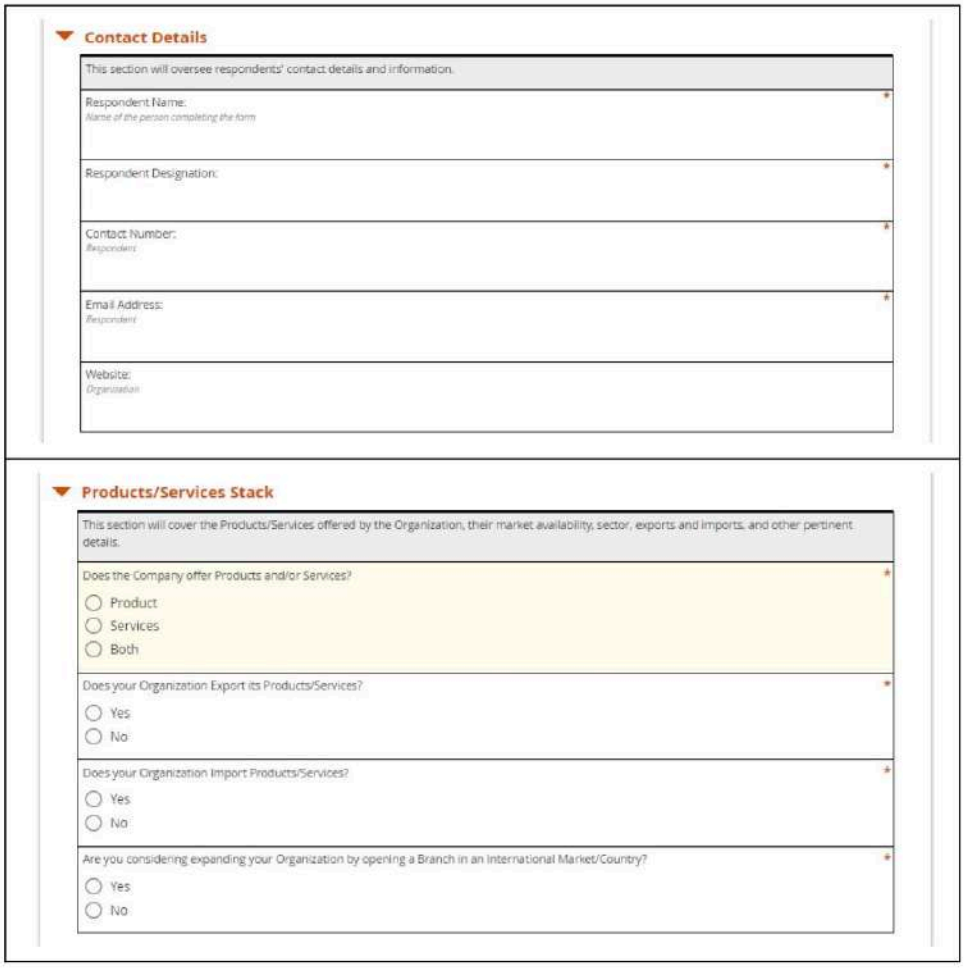
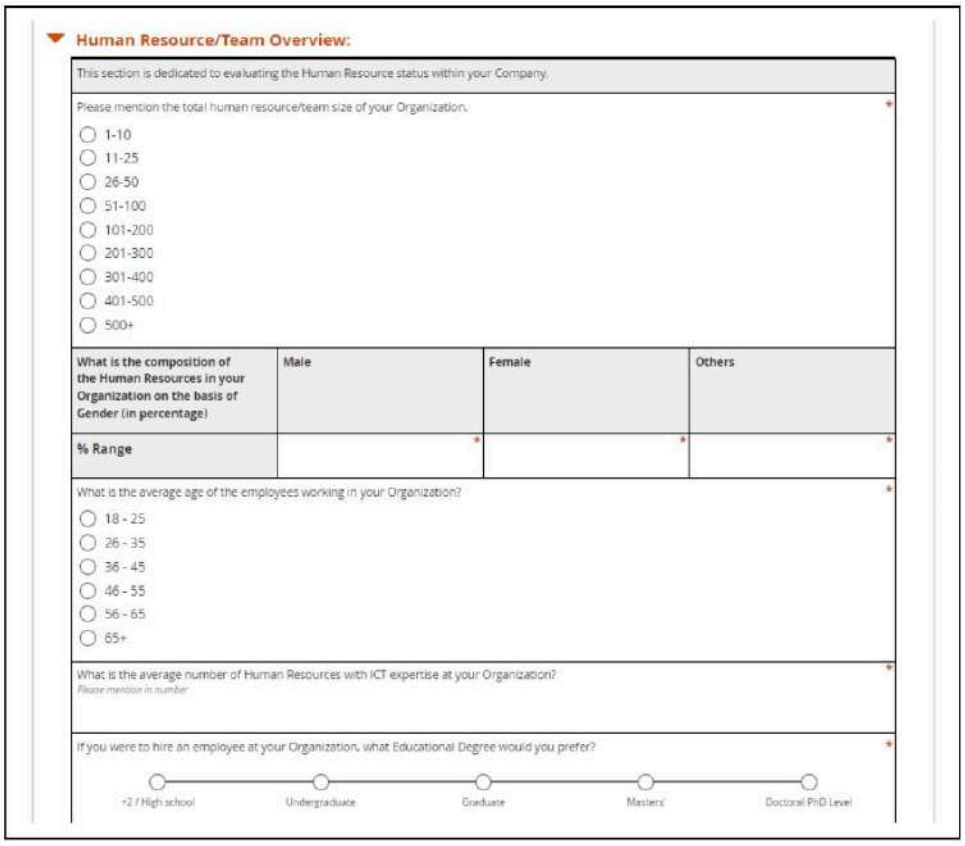


Figure 13 : Disseminated Questionnaire



Human Resource/Team Overview:

This section is dedicated to evaluating the Human Resource status within your Company.

Please mention the total human resource/team size of your Organization. *

- 1-10
- 11-25
- 26-50
- 51-100
- 101-200
- 201-300
- 301-400
- 401-500
- 500+

What is the composition of the Human Resources in your Organization on the basis of Gender (in percentage)	Male	Female	Others
% Range	*	*	*

What is the average age of the employees working in your Organization? *

- 18 - 25
- 26 - 35
- 36 - 45
- 46 - 55
- 56 - 65
- 65+

What is the average number of Human Resources with ICT expertise at your Organization? *

Please mention in number

If you were to hire an employee at your Organization, what Educational Degree would you prefer? *

+2 / High school | Undergraduate | Graduate | Masters' | Doctoral PhD Level

Figure 14 : Disseminated Questionnaire

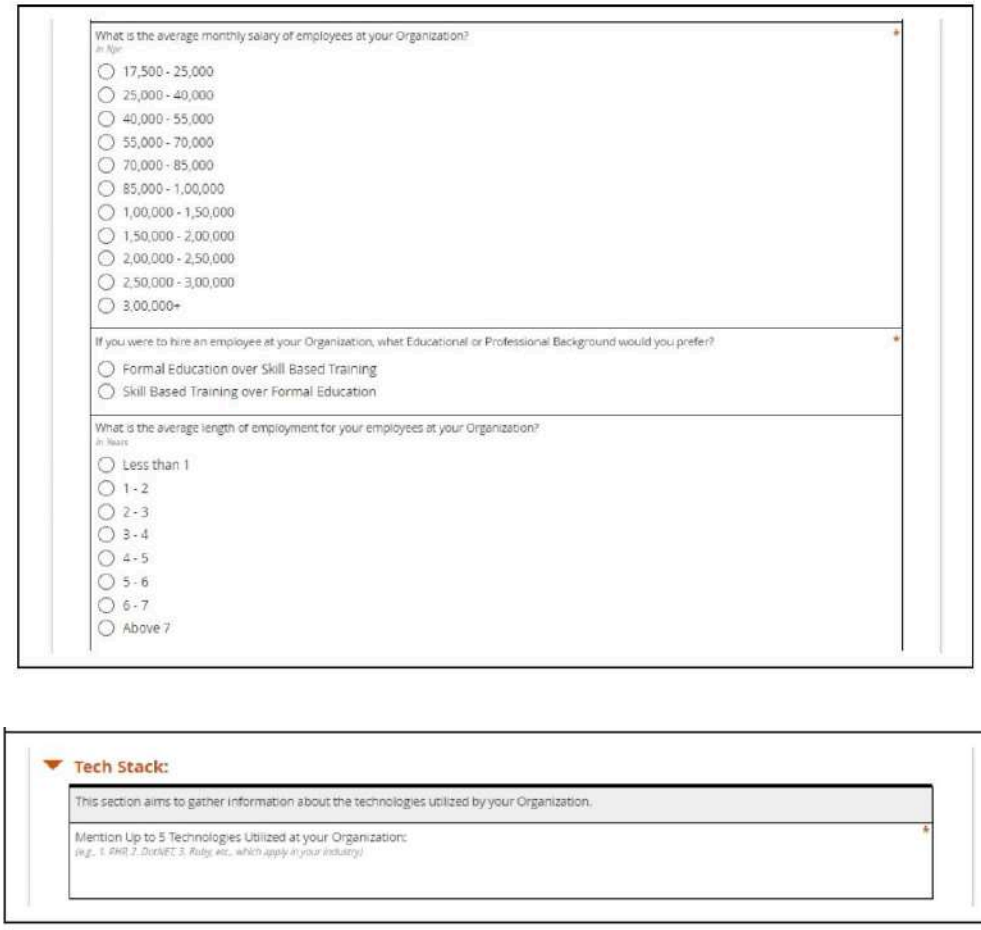
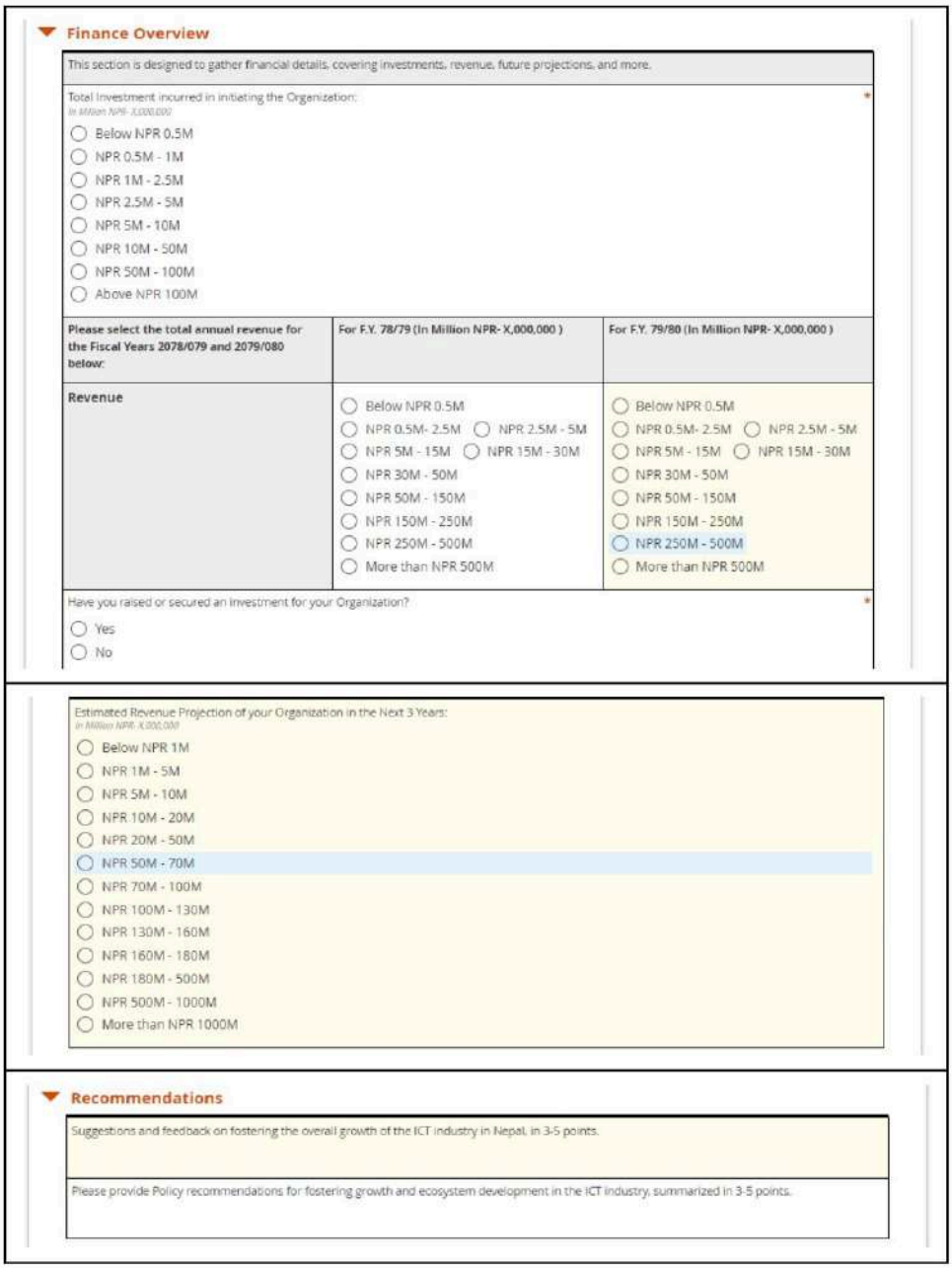


Figure 15 : Disseminated Questionnaire



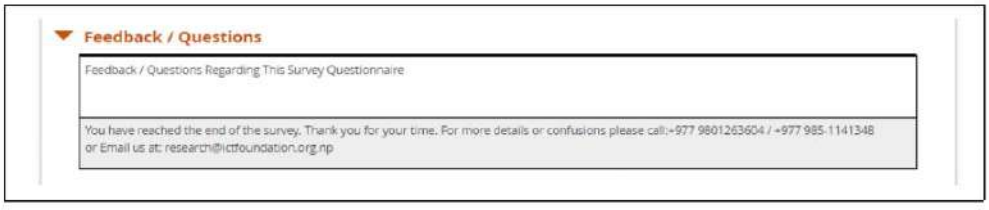


Figure 16 : Disseminated Questionnaire

Suggestion & Feedback

Investment and Financial Support

1. **Easy Access to Capital**: Provide project-based loans without the need for land or building collateral. Offer loans specifically tailored for ICT companies and startups.
2. **Tax Incentives**: Implement tax incentives and exemptions for IT companies to encourage investment and growth. Offer tax breaks for companies bringing in foreign income and for startups.
3. **Support for Startups**: Provide financial support, mentorship, incubation facilities, and R&D grants for IT startups to encourage innovation and entrepreneurship.

Regulatory and Policy Improvements

1. **Supportive Policies**: Implement policies that encourage FDI, protect intellectual property, and streamline regulatory processes for tech businesses. Simplify legal and taxation processes for IT companies.
2. **Public Procurement Model**: Revise the existing public procurement model to be more favorable for IT companies. Reduce bureaucratic hassles in government offices.
3. **Startup Ecosystem**: Create a conducive environment for innovation and entrepreneurship by easing government procedures and providing startup-friendly tax regulations.

Promotion and International Reach

1. **International Collaboration**: Promote international collaboration and partnerships to enhance Nepal's position in the global ICT landscape. Facilitate the establishment of overseas branches for Nepali IT companies.
2. **Tech Events**: Organize international IT events in Nepal to promote the local ICT industry and provide exposure to global markets.

Public-Private Partnerships

1. **Collaboration on ICT Projects**: Foster partnerships between government, private sector, and international organizations to undertake large-scale ICT projects. Leverage expertise and resources from the private sector and international partners.

Government Services and Bureaucracy

1. **Digitize Government Services**: Digitize government-related services to reduce time-consuming processes and improve efficiency.
2. **Simplify Business Procedures**: Provide hassle-free registration, updates, and operations for IT companies in government sectors.

Investment in Research and Development

1. **R&D Focus**: Increase investment in research and development to keep up with technological advances and support innovation in the ICT industry.

Miscellaneous Suggestions

1. **Recognition and Branding**: Provide proper recognition to motivate new startups. Promote Nepali ICT products and services internationally.
2. **Payment and Financial Systems**: Improve international payment systems and make opening companies abroad easier. Organize government grants for product-based platforms. Reduce the fine system for delayed tax payments for small-scale startups.
3. **Intellectual Property Laws**: Introduce strong IP laws to protect innovators and encourage further innovation. Provide tax incentives for innovators and patent holders.

Education and Skill Development:

1. Enhance ICT curriculum at all educational levels to include the latest technologies and practical skills.
2. Promote STEM education and coding from primary to tertiary levels.
3. Establish vocational training programs and certifications in cutting-edge fields such as AR/VR, cybersecurity, blockchain, AI, and more.
4. Develop partnerships between educational institutions and tech companies for internships, workshops, and mentorship programs.

Support for Startups and Innovation:

1. Provide financial incentives, grants, and access to venture capital for startups.
2. Create incubation centers and accelerators to nurture innovative ideas and help entrepreneurs.
3. Offer tax breaks, subsidies, and simplified regulatory procedures to encourage innovation and entrepreneurship.
4. Facilitate access to funding, including collateral-free and low-interest loans for startups.

Policy and Regulatory Framework:

1. Implement favorable policies and incentives for ICT businesses, including tax benefits and subsidies.
2. Streamline regulatory processes to make it easier for startups and tech companies to operate and scale.
3. Protect intellectual property and strengthen data privacy laws.
4. Simplify and streamline regulatory procedures to attract foreign investments.

Public-Private Partnerships and International Collaboration:

1. Encourage collaborations between government, private sector, and academia to drive innovation and address industry challenges.
2. Foster partnerships with international tech companies and organizations to facilitate knowledge transfer and market access.
3. Promote Nepal as a competitive destination for IT outsourcing and offshoring services.
4. Engage in international ICT forums and trade shows to showcase Nepal's ICT capabilities and attract foreign investments.

Digital Literacy and Inclusion:

1. Promote digital literacy and accessibility among all segments of society.
2. Launch nationwide digital literacy campaigns and provide affordable digital devices.
3. Ensure a reliable and uninterrupted power supply to support ICT operations and prevent downtime.

Promotion of Local Products and Services:

1. Encourage the use of Nepalese software and ICT products within the country.
2. Provide incentives for local tech companies to develop and export their products and services.
3. Support the manufacturing of ICT equipment and establish assembly plants.

Government Support and Practical Regulations:

1. Develop and enforce clear ICT policies to create a predictable and stable environment for investors and businesses.
2. Facilitate market access for Nepali ICT products and services through trade agreements and export promotion initiatives.
3. Ensure transparency and efficiency in regulatory bodies and processes.
4. Provide funding, mentorship, and incubation programs for startups to drive innovation and overall growth within the ICT sector.

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Thank you