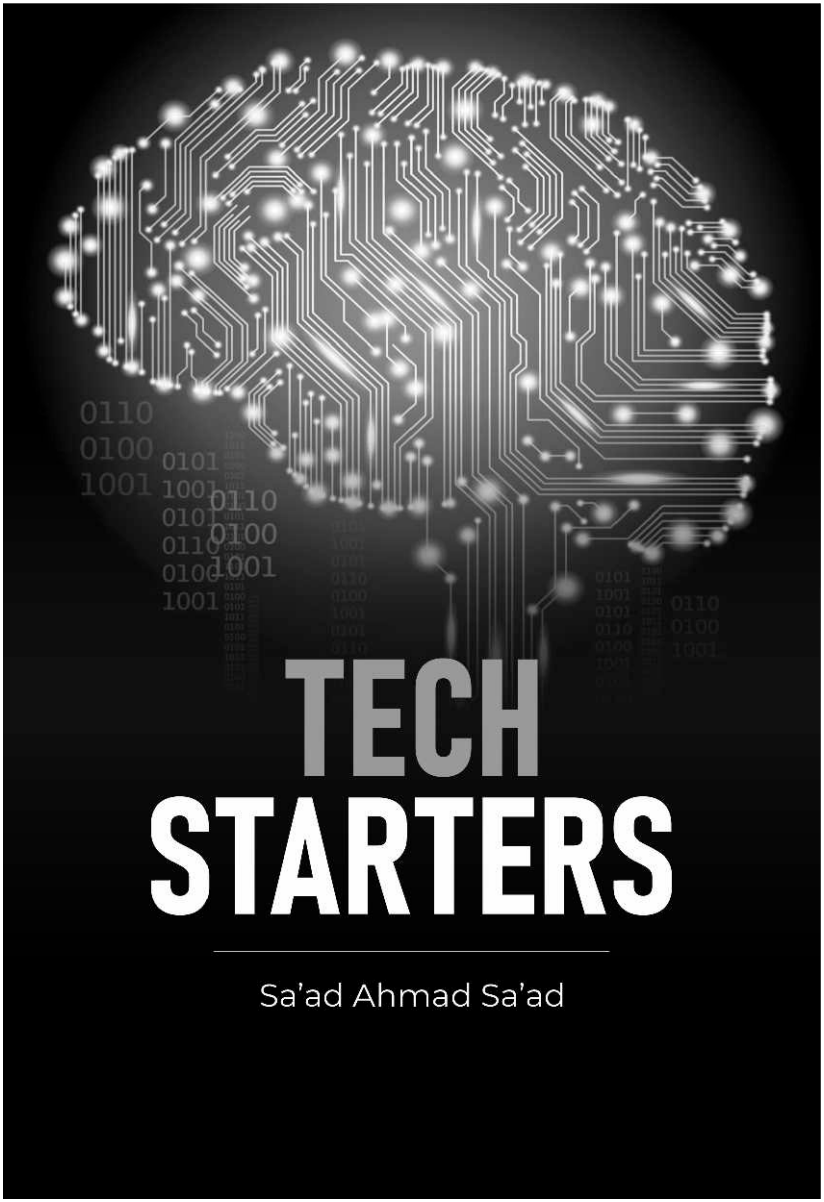
TECH
STARTERS
Sa'ad Ahmad Sa'ad

TECH STARTERS
A BOOK ON TECHNOLOGY FOR
BEGINNERS IN TECH
By: Sa'ad Ahmad Sa'ad

DEDICATION

To the community.

ACKNOWLEDGMENT

Writing this book factualizes to me the adage: “two useful heads are better than one.” There's no any work of art, in my experience, no matter how small it is, that grades only the author. Surely, every iota of effort put by the family and friends into this work is highly appreciated.

Firstly, I acknowledge Allah (SWT), the Exalted, the Lord of the Universe, the Provider of the oxygen I breathe and the Source of my Strength whose grace has always been sufficient for me. My parents—my father Late. Sgt. Ahmad Sa'ad and my mother, late. Hapsatu Muhammad Baba (May their soul rest in peace) who bore me weakness upon weakness, stood by me in times of ease and hardship, provided me with religious and western education that enabled me bring fore this useful work and supported my struggle financially, sociologically and psychologically—I thank them for their unalloyed support in putting this experience into a book.

I consider my wife, Aishatu Mohammed (Ashfat) the spotlight that illuminated my path to writing this book. She provided with innate sanity that enabled me to concentrate on the work. Without her love and care, I wouldn't have been sound in heart and mind to see it done. I thank her immensely and God willing, together we live and die. As per my friends and associates in tech, they are indeed many.

But I can't pen off without mentioning Ahmad Tijjani Yunusa, Muazu Muazu, Muhammed H. Bala and Eric David Benari who supported me throughout the journey. Without their advice, I doubt if this book would have been published. I am short of words to express my gratitude.

To the editor, Muazu Umar Mallam, who took his time to edit, beautify and see the book has got rid of unforgivable grammatical errors, I will count on him. Augustina Daniel Erdoo, her effort to see the book has this technological cover which is richly incompatible to the others is appreciated. My special thanks go to every Techie Youth graduates and student who, in one way or the other, helped in the process of writing this book. Their unyielding support in the course of seeing this project a success is recorded in the book of my appreciation.

PREFACE

To see through the pace of Leonard Ravenhill, in his style of prefacing, here is my simple offering of loaves and fishes for the starving beings. I have been craving for anything technological since the end of my days at Adamawa State Polytechnic, as a computer science student. I have read hundreds of pieces, articles and serials on tech, but I am yet to read any that's written to address the challenges faced by tech starters in the Northern Nigeria, Northeast in precision.

If you could ask those who lived when the world was not yet living in cyberspace the difficulty of life, the story would always be untold. Letters would take months before they were delivered. There's no a better instance than this. Therefore, as the age of Paleolithic had been eclipsed by the age of science and technology, there's need for a written piece or book for a community as Northeast on how to use the tech. This wonderful evolutionary jump in tech gives the book, a tech starter, brand-new life.

TECH STARTER is a book for all people that want to start career in Technology and STEM. The book is a food-for-thought for the folks who have interest in learning how to take any step in the tech without losing it in the journey. The book, in its richness, helps its readers to explore more of technology by bringing forth educative

interviews from great technologists and innovators, past and present. So, it's not meant for merely tech starters but for all who can read.

Sa'ad Ahmad Sa'ad
Author, TECH STARTER

BLURBS

From my experience as a reader and editor, I am yet to read or edit a book that's richer in wisdom and motivational techniques that guide tech starters in building a bridge towards effectuating their tech dream than this. Sa'ad Ahmad Sa'ad has done well by providing such a wonderful and inspirational book.

—Muazu Umar Mallam,
Volunteer Columnist, DailyTrust Nigeria.

I was curious to be part of the technology when I found this book tech starter… This book is very splendid as it introduces aspiring basics concept of getting started in tech with some of strategies. It, in its unique form, provides short, precise, and easy ways to start a career in various field of technology.

—Ahmad Tijjani Yunusa
COO, Hacksat Tech Ltd.

Tech, to me, has been a very important phenomenon that it left me with curiosity to read Sa'ad's TECH STARTERS… after reading it, I found it worthy of my time.

—Aishatu Mohammed,
Economic Student, FCE Yola.

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INTRODUCTION

Do you have a tech (technology) idea that you have been thinking of? Have you looked around you and have seen the need to start up a tech that will help your community and your country at large but you don't know how to start or how to bring the ideas into reality? Well, this book titled "The Tech Starters; A BOOK ON TECHNOLOGY FOR BEGINNERS IN TECH" will open your eyes and mind to understand who tech starters are and how they can bring their tech ideas into reality.

While writing this book, we traveled through the Northeastern Nigeria starting from Adamawa and Taraba state to the rest of the other states to gather the experiences of people in tech - so that they can be part of this book and be inspirations to people who want to start tech, especially in the North East. This is because it is a place where tech has not been firmly rooted, and has shook the technological foundation in the lives of young people.

Nigeria is a country with many people of great potential and talents but, at times, they fail to realize that it can be used for a national development. Therefore, this book is centered on the tech starters of Nigeria, aiming at bringing in the tech experience of people from the Northeastern Nigeria compilation. It brings to you the experience of these people of 3Hs – how they came up with the idea, how they

started, how they have been in the tech. And to some extent, how their experiences can help the reader of this book to develop their tech ideas and have them rightly implemented.

In this book, there is a story of those people who were able to build up a tech and as they grow by seeking supports from the government for the expansion of their company for the progress of the country technologically and economically.

Nigeria needs tech, it needs people that can stand up and build technological tools -- both physical and digital products that can help the country. Most of the technologies we use today were built by people who saw the need to help humans for easier coexistence. Most houses today use technological tools to make work easier and life comfortable for them. In the aspect of tech, Nigeria has been lagging, even though there are people who stood up to start already, as proven, something big and have built up tech that has helped the country.

Part One

Chapter 1

The Meaning And The Fields Of Technology According To Scholars

Another name for technology is tech. Tech is the application of scientific knowledge for practical aim. Technology is the act of using scientific knowledge and skills to build, create and develop a product to help solve a problem.

According to Aristotle, Technology is an arrangement of technics to make possible and serve the attainment of human ends. Heidegger added that Tech itself is not good or bad but the problem is that technological thinking (Calculative thinking) has become the only form of the thinking. Mitcham (1978) defined Technology as a human making or using of materials artifacts in all forms and aspects (p. 232). In his December 1937 essay vol 2 issue No 6 of the American Sociological Review titled; TECHNOLOGY AND STATE GOVERNMENT, Read Bean said "Technology includes

all tools, machines, utensils, weapons, instruments, housing, clothing, communicating and transporting devices and skills by which we produce and use them" (p. 860)

Technology has been seen as good and bad, but it basically depends on how an individual uses it. Technology has helps humans to find work easier, it provides comfort to humans. With technology humans work smartly.

FIELDS OF TECHNOLOGY

There are different fields technology is being used in today's world and how they are being applied in those fields. However, they are not only restricted to the ones mentioned in this book. With the application of technology in those fields, people's way of life has been positively impacted and some of these fields include;

1. INFORMATION COMMUNICATION TECHNOLOGY (ICT)

Information Communication Technology is one of the common technologies used in the world today. With the help of information communication technology sharing messages, data, and information has been easy. Some examples of information communication technologies are; smartphones, radio, television, internet, emails, computers, electronic books etc. The term Information Communication Technology (ICT) includes various

forms of technologies that are used to create, display, store, process, transmit, share or exchange information by electronic means (UNESCO 2007).

The first commercial computer was the UNIVAC I which was developed by John Eckert and John w Mauchly in 1951. Information communication technology provides quicker and newer ways of communicating with people, easy access to information and data, protection of information and data and learning in a faster and better way. Some information communication technology tools are; computers, laptops, software programs, printers, desktops, microphones, data projections etc. Some career available in information communication technology are; Database management, big data analytics, project management, web design, computer programming, machine learning and artificial intelligence etc.

In the future world, ICT will play a highly important role in convergence of fast computing together with high-speed communications and all other smart computational sciences and application and ICT also will influence the future world's various areas, including science, engineering, industry, business, law, politics, culture, medicine and so on. However there still exist lots of challenges in future ICT. The advance smart applications based on future ICT and fast computing together with high- speed communications.

2. AGRICULTURAL TECHNOLOGY (AgriTech)

With the help of technology, farming and other agricultural processes have been made easy. In the past years, people used the primitive tools to do agriculture which has resulted to agricultural degradation. Hitherto, some people still use the it despite that technology has taken off the era. AgriTech has to do with the modern way of using technology to make agricultural processes easier and more profitable. Some of the examples of how Technology is used in agriculture include the usage of drones to spread farm fertilizers, automatic watering and weather forecast as well as the use of tech in control of pest and diseases in crops, robotic harvesters and soil testing. That is to know whether it will be suitable to plant a specific plant on it and autonomous tractors.

New development is being recorded in agriculture because with agriTech, agriculture processes won't be difficult. Moreover, with the use of modern agricultural tools, crop yield will increase, disease in plants and crops will be reduced as storage of harvested crops will be greatly improved. People mostly use the manual way of harvesting but with technology, many autonomous and robotic harvesters will harvest more and easily. Some career opportunities in Agrictech are; agricultural Engineer, plant scientist,

3. MEDICAL TECHNOLOGY

Health Technology is defined by the World Health Organization

(WHO) as the application of organized knowledge and skills in the form of devices, medicine, vaccines, procedures and system developed to solve a health problem and improve quality of lives.

Medical technology means the technologies used in medical field to improve people's health, save lives and prevent disease and lots more.

Medical Technology has taken over the medical field by making people to have access to good medical care, modern way of treatment and saving human's life such as the research on symptoms, causes of disease and treatment, human aiding devices, artificial body parts, data collection, x-rays machines, wheel chairs, telemedicine, robotic surgery, detecting machines use of detect certain illness, thermometers, testing strips, pregnancy, scanning machines, surgical equipment and others.

Four Types of Medical Technology by Carol Trehearn, Content Partner, November 22, 2021.

Combining technology with medicine changed the way we treat and are treated as patients. Now, it's possible to cure diseases, which used to be an automatic death sentence, make early cancer diagnoses and even treat babies who are still in the womb. Providing quality health care has become easier with how medical technology has evolved over the years. Here are the four types of medical technology you should know about.

Telehealth

Telehealth or telemedicine is where a medical professional can administer healthcare without the need of going to their offices. It can be done via anything that can be connected to the internet such as laptop and smartphone. Virtual appointments, beside telehealth, allows one to send secured messages through text or email to their doctor. It also lets doctors to check on their patients routinely through remote monitoring. An example of this process is by using some of the vital monitors or a CPAP machine for sleep apnea.

Robotic Surgery

Robotic surgery is probably among the lesser-known forms of medical technology. That's because it was once considered a novelty and used in very specific situations. Nowadays, scientists and medical professionals have made substantial progress in making robotic surgery more mainstream. When someone thinks of surgery, they usually think of a room with handful of nurses and the surgeon. However, technology has made it possible for surgeries to be performed with minimal human contact. It's minimally invasive and can produce more accurate results as well as reduces the risk of a patient getting an infection.

This new way of performing surgery does require a subtle hands-on approach as the robots can't operate themselves. To operate this machinery, one would need a degree in Medicine. Graduate degrees do cost a bit more than other degrees, especially master's and Ph.Ds. You can expect to spend around $80,000 to $120,000 in college and

around $130,000 in medical school fees. One's best bet is to take out a student loan from a private lender. Even for graduate degrees, they usually offer lower interest rates and a variety of repayment options once one completes his or her degree.

Artificial Intelligence

AI or Artificial Intelligence has been around for long. It's been integrated into many aspects of our lives including medicine. In the medical field, the incorporation of AI has made it much easier for medical professionals to document patients, gather more precise information, make more accurate diagnoses and help to make advancements in drug development. AI has helped in lowering the risk of burnout among workers as it takes care of most of the lesser tasks for them.

Wearable Devices

Wearables may be something one is already familiar with. Technology has taken health wearables to the next level. In fact, certain brands like Apple have incorporated health managing technology into their products. The Apple Watch has an app that keeps track of the pace and rhythm of people's heartbeat -- how many steps you take every day and even your sleeping patterns. Having access to this kind of information helps in leading to less anxiety through exercise incentives. Being able to see and track progress can encourage one to work and maintain that progress even when you do not necessarily feel like it.

4. BIO-TECHNOLOGY

Bio-technology which is also known as Biotech is the utilization or modification of a living organism or its parts to create or develop a different product. The American Chemical Society defines bio-technology as the application of biological organisms, systems or processes by various industries to learning about the science of life and the improvement of the value materials and organisms such as pharmaceuticals, crops and livestock.

Biotechnology is used in different aspects of human life such as; environment, plants and animals. Biotechnology uses microorganisms like yeast in making or production of bread, milk, beer etc. Biotechnology is also used in medicine, pharmaceutical drugs research, genetic testing, DNA profiling, transgenesis etc. It is also used by the mining industries in bio-leaching. It is also used in recycling and treating of waste products.

Biotechnology careers today is on the increase because biotechnology is used in almost every aspect of life such as health, engineering, agriculture and many more. Some career opportunities in biotechnology include DNA analyst, chemical operator, microbiologist, clinical tech technician etc.

Experts said that bio-technology will be a survival tool in the coming years with the increasing number of lethal diseases and pandemics. Also, with the world population of 7.837 billion, we will need new technologies in the agricultural sector. All in all, biotechnology has a

significant role in the future of the world.

5. TRANSPORTATION TECHNOLOGY

Technology has taken over the means of transportation in our world today. Transportation has been easy with modern means such as cars, motorcycles and airplane. New modern cars are produced today to make transportation easy and comfortable. Rocket has also been built to travel outside the earth to other planets. All of these are parts of technology and humans enjoy using them.

With the application of technology in transportation today, we have smart bicycles, underground roads, multi- directional elevators, traffic signal systems, delivery drones and many more. More technologies in the aspect of transportation are still coming up. With technology in transportation, it is believed that in few years to come, the rate of accidents will be reduced to the barest minimum and transportation systems will greatly improve.

6. SECURITY TECHNOLOGY

Technology has really improved the security aspect in the world today --- our country Nigeria in inclusion. With tech in security today, people find new ways of protecting lives and properties. Security Technology is divided into physical and IT security technology.

Physical Security Technology has to do with protection of lives and

properties of people by the use of bulletproof clothes and cars, CCTV cameras, inspection and surveillance drones to detect enemy's hideout etc. While the IT Security Technology has to do with the security in the internet world. IT security has greatly helped people to protect their data, and privacy such as the cyber security, password protection, data masking, data backup, privacy policy and others.

7. SPACE TECHNOLOGY

The first man who stepped on the moon was Neil Armstrong together with Edwin Aldrin and Michael Collins who went with him. They went in a spacecraft called Apollo 11 in 1969.

This has to do with the technology of people traveling to the other planets or the space. With the invention of rocket, people can use it to travel outside the earth to learn and explore other things outside our earth. With the help of space tech, satellites (a natural or artificial object moving round another larger objects in space). With the help of satellite communication signals and other data are transmitted very well such as TV signals, phone calls, internet connections and more. With space technology, people can predict natural disasters, learn about the existence of other planets and other creatures outside the earth and weather forecast.

8. FINTECH

Fintech is also known as Financial Technology. It is a new way of using technology to deliver financial services. The use of smartphones for mobile banking, cryptocurrency, investing services, online banking platform are all examples of Fintech. These Fintech have been designed to make financial services accessible to people. Fintech companies mostly use technologies like Blockchain, encrypted transactions, robotics, artificial intelligence and big data to deliver their services.

Fintech has to do with all the software and mobile applications that have been built to improve and upgrade financial business and to make these services available to the customers. Fintech has reduced the number of the physical payment method users. Technology has made it easier for Fintech companies to manage and access their data easily. Some examples of Fintech companies in Nigeria are; paystack, flutter wave, Kuda bank, paga, Remita, Interswitch etc. Most Fintech companies in Nigeria offer services like mobile payments, lending services and crowdfunding.

Tobias Adrian and Ceyla Pazarbasioglu have written on the five facts of Fintech, June 27 2019

In their writing, the five facts of Fintech are:

1. Cyber security and data protection risks recognize no boundaries with spill overs across sectors and countries. And governments are working hard to get a handle of the issue.

2. Asia is ahead of other regions in many aspects of Fintech.
3. The Sub-Saharan Africa is a global leader in mobile money innovation, adoption and usage.
4. Europe is not unified when it comes to Fintech.
5. Digital currencies backed by central banks could become real. Originally published on IMFBlog.

In the 2021 Fintech Times Report, with respect to Fintech, Nigeria's Fintech landscape consist of 210 to 250 companies, key stakeholders (banks, telecom companies and the government) enablers and funding partners (i.e., universities and research institutions, investors, incubators, Technology and consumers). In fact, experts predict that the industry will exceed $300 billion globally by the end of 2022.

Some career opportunities available in Fintech are; cyber security, software developer, app development, data specialist, financial analyst and many others.

9. BLOCKCHAIN TECHNOLOGY

Blockchain technology is an advanced technology that is used to keep digital information safe. The blockchain is an immutable and unchangeable -- a transaction or file recorded cannot be changed -- digital ledger (digital record of transactions or data stored in multiple places on a computer network) with many user cases beyond cryptocurrencies.

Immutable and distributed are two fundamental blockchain properties. The immutability of the ledger means one can always trust it to be accurate. Being distributed protects the blockchain from network attacks.

The information contained in the block is dependent on and linked to the information in the previous block and, over time, forms a chain of transactions. Hence the word blockchain. With blockchain offering some promising user cases, helping many companies become more efficient, and attracting big companies like Amazon and Tesla, it can be an attractive investment. Some examples of Blockchain are Bitcoin and Ethereum. For example, a Bitcoin block contains information about the sender, receiver and number of Bitcoin to be transferred.

Blockchain is very important because it allows digital information to be recorded and distributed but not edited. It makes transactions and data hard to be destroyed or changed, offers high level of security in modern digital transactions and it is used to track properties in a business such as house, cars land and blockchain secures digital currencies.

In the future, Blockchain is expected to grow bigger to be used worldwide in the record keeping systems. That's the reason Jean Philippe Courtois says; “Block chain Technology it's actually providing both transparency but also agility in a contractual relationship that any organization should have." While Julie Sweet

says; "Blockchain is moving beyond cryptocurrency and its worth paying attention especially since successful prototypes show that Blockchain also known as distributed ledger Technology will be transformative."

10. ARTIFICIAL INTELLIGENCE

Artificial intelligence is one of the modern technologies which is known as AI. It is the ability of a machine or robot to be controlled or operated by a computer to perform human task? Which means that the machine is infused with human intelligence, making it to act and do what humans do such as reasoning, solving problems, decision making and many more.

AI is used in voice recognition, banking to detect fraud, transportation (self-driving cars), urban planning, healthcare, etc. The advantages of AI are that is reduces human errors, it fast and can work non stop etc. Some careers in AI are; AI/machine learning researcher, AI software developer, robotics engineer and machine learning Engineer.

A future job report released by the World Economic Forum in 2020 predicts that 85 million jobs will be lost to automation by 2025. However, it goes on to say that 97 new positions and roles will be created as industries figure out the balance between machine and humans.

11. NANO TECHNOLOGY

Nanotechnology relates to the science and engineering of materials and devices with dimensions between 1 and 100 nano meter.

Nano Technology benefits are: reduction in the use of raw materials though improvements in manufacturing, development of techniques in nano surgery, improved diagnostic procedures, improved storage of data, development of molecular computers, manufacture of smart materials, improvements in the quality and reliability of metals and plastics.

Nanotechnology is expected to foster multi- billion-dollar business with "nano-materials" playing a prominent role. Among nano-materials are polymer composites. Polymer composites have emerged as a new class of materials that has attracted the attention of researchers and industry across the world. Polymer composites are predicted to find multiple applications in various sector of the economy, such as packaging, coating, consumer goods, automotive construction materials, structural materials and even homeland security (Mohanty, 2006).

12. EDUCATIONAL TECHNOLOGY

Educational Technology is also known as EduTech. It involves the use of technology in education so that students can learn better and educational processes will be made easier. With technology in education today's students can access educational materials online

to learn better, make research and explore more on education.

Back then, students used to write exam on papers for teachers or lecturers to spend days marking it. But with technology today, computer-based exams are done and the computer marks the exams automatically. Storage of student's data are being done today on computer systems and can be easily accessed. With technology in education, people enroll in online schools to have their degree, masters, PhDs and other courses.

IMPORTANCE OF TECHNOLOGY

Importance of Technology in Education

Technology contributes significantly to the access and acquisition of information, and thus the development. This is the reason for the existence of huge scientific and cognitive revolution which entails facilitating human life by increasing inventions in various practical fields.

E-learning is one of the most significant contributions of technology to learning; the learner can control his / her education system by managing the learning process, the content of the learning process, and communicating with colleagues during the learning process. It has provided the learner with many programs that provide immediate reference to what the learner is asking for, by providing discussion forums and libraries that allow questions to be asked and answered very quickly.

Technological advances have also allowed the so-called open education that allows people with health problems or living far away to enroll in online classrooms. You can transform your learning style with online education resources. PDF is a file format that is developed by Adobe to present documents. Using online tools, you can edit PDF for free. PDF software makes it possible to convert existing materials and create new resources in a digital format.

Importance of Technology in Decision-Making and Problem-Solving

Technology has contributed to solving various human problems, especially at the present time due to the rapid state of change associated with the amount of information that exists. It has also facilitated communication between human beings and has helped to provide different means of transport and introduced new agricultural methods that are a reason for I

ncreasing food production.

It should be noted that applications made in the field of health care and consequently positive, and many other technological means have developed the lives of people, and helped them save time and effort. For example, technology supplies factories with many advanced machines and equipment that have helped to provide high-quality goods and services, facilitate production processes in factories, and make them less time and effort-consuming, in addition to reducing the cost of operating for the benefit of

employers.

Importance of Technology in Domestic Work

Electric power provides light to people's homes and roads; it is used to power electrical tools, factories, etc. There are many modern tools that made it easier for people, such as a vacuum cleaner, which was replaced by old tools used to do so, as well as the electric heating device for various foods called (microwave), and the ordinary oven. Electricity has made it easier for a housewife to prepare food easily and quickly and many other modern tools that are truly a blessing from God to modern man.

Importance of Technology in Health Care

Technology has helped doctors answer all patient queries faster. There are various technological innovations in the health sector such as the invention of certain drugs, the development of information technology, biotechnology, and development processes.

Technology constantly strives to contribute to the development of instruments and equipment used in the medical field and preserve the healthy lives of people and raise their standard of care. This has led to the development of some inventions to become larger and more useful and complex in installation, such as detectors and magnetic resonance imaging, and industrial devices with an automated system. Advanced medical devices have made it possible to detect many diseases and have facilitated their treatment. In addition, they have provided the opportunity to complete some

types of treatment at home, resulting in a shorter stay in hospitals, and thus a reduction in the cost of treatment.

Importance of Technology in Business Today

Business is one of the most beneficial areas of technology. The manager makes his decisions in a short time and he can easily solve problems, with the help of technology.

Information technology and its applications in the business world have facilitated the use of computers and allowed the use of the web, thus making work more flexible. The most important advantages of technology in this area may include:

Easy access to reports: There are many companies that have many branches locally or globally. Technology allows them to communicate between their multiple branches to obtain reports on the progress of the work and financial capabilities of each branch, and it provides an opportunity to connect to competing markets and provide reports that are available. Thus, technology can be relied on to carry out these tasks rather than sending delegates and reviewers for information.

Increased employee productivity: Technology has contributed to a significant increase in the productivity of workers, both at the level of clerical work or manufacturing work, as most industries are now using machines instead of the human element; this means saving time and effort. Despite the high cost of using technology in the industrial field, its usefulness was greater than its cost; it saves the

labor cost required in the production process, while at the business level related to customer service, it increases employee productivity so that all data and information are reviewed in a short time rather than manually.

The following points address some of the benefits and importance of using technology in business:

- Technology provides many mechanisms that contribute to increasing the efficiency of work and productivity entrusted to it, in addition to accelerating and facilitating the work process.
- There are many software programs that help to achieve accuracy in financial transactions and related salaries of employees, or pay bills or other, and make the implementation of these tasks easier.
- The technology achieves a high degree of competition between companies or institutions, and provides a number of mechanisms to help, including marketing and selling online, as well as communicating with the right customers in the right place and time.

WHY TECH?

The world is revolving and changes are being made every day. One thing that builds the world today is technology and almost everything is centered on technology. We need to stand up and build

our country with technological ideas that we have. For in the years to come the world will be swallowed by technology and without it, our country will be struggling with non- technological tools.

Technology has always been part of human life since its existence, and humans have enjoyed using technology. Nigeria needs to improve its technology to help serve global purposes. With technology, humans will have ease in doing some works. In every field of work today technology is involved in one way or the other.

How Has Technology Changed Our Lives?

According to Scientific World (November 21, 2019) no one can escape the absolute necessity of technology in our daily lives. Each of us is so heavily dependent on technology that we cannot do anything easily without it. Technology is important because it is used in all areas of life. When you contemplate your daily routine and count all the technology gadgets you consume in just one day, you will realize how important technology is when you use your mobile, watch TV, drive a car and use computer or any electrical machine.

Humans have also reached the moon with the revolution in space technology. Technology can not only help the present but brings the future closer. Hence, technology is undeniably important in our lives.

The advent of modern technology has brought great changes in our

modern life. History tells us how Neanderthals used stones to burn fire to cook and how wood was used to make spears which were used to hunt animals and other primitive methods. Then, over the years, these techniques developed gradually until technology is advanced.

Technology will not stop at a single threshold, but we still hear daily discoveries and inventions by scientists as it has spread all over the world and people use it all the time. It is no longer limited to work and in developed societies, but any person, regardless of their cultural and social background uses a cell phone to. For instance, take pictures, send and receive them.

Being this the case, the question now is; what are the most significant changes that technology has brought to our modern lives? There is no doubt that we are experiencing a tremendous development in technology. This technology has had a negative or positive impact on our life. As a result, it has influenced the way we live and we rely heavily on it as humans continue to evolve continuously.

Technology helps us to keep in touch with people who are away from us. We use phones and computers to talk to them and even see them. Our daily office work has become a technology-based one. PDFs are edited online to customize documents with easy-to-use editing tools. We keep our health by going to the gyms. There are machines in the gym that help us reduce our weight and keep fit. We get to keep a lot of information in a small device and use them in

times of need. Technology cannot be appropriate for some tasks and has negative influences. Everyone determines and decides how to either use these technologies in negative or positive ways.

Modern Technology and the World Wide Web (WWW)

The World Wide Web is defined as all content on the Internet such as web pages, videos, and images that are displayed in HTML and can be accessed through the users' web browser. It should be noted that the web is symbolized by the abbreviation (WWW), and access to this network through a communication protocol is known as HTTP. This network was invented by Tim Berners-Lee in 1991.

After the invention of the Web, and when it became accessible to all people, its pages were filled with millions of sites that serve people in their lives by providing information and knowledge and allowing them to communicate with each other through programs that allow seeing the caller and moving pictures.

Chapter 2

Tech Starters And The Skill Need For A Start Up

Tech starters (beginners in tech) are persons who have the idea of starting a technology or have just started their career in tech. A lot of people have the idea of starting a technology based on the problem they see around them and want to solve them.

WHO ARE TECH STARTERS?

This question is one of the question with a very straightforward answer. Tech starters are those who;

Love Technology; as a tech starter one needs to love technology, without loving technology. One finds it very difficult at the start. Tech starters are people who have love, interest and are passionate about technology and new trending and modern way of doing things.

Figure a Problem that Needs Technological Solution; Tech starters are people who see a problem in their community and even outside their community and want to proffer to it a technological solution. As a tech starter you need to be very observant of the problem going around you that needs solution. That's because it is there you will get the idea and the motivation to enable you proffer the solution effectively and efficiently.

Innovate; to innovate means to recreate something. As a tech starter, you need to have an innovative mind to be able to recreate things. Some technologies need recreation and as a tech starter, you need to figure out what needs to be recreated and bring something out of it.

Create spaces; create spaces that allow them accommodate other people that have interest in technology and to work together with them for the growth and development of their country. Tech starters don't push other people away but work with them as a team for the success of their projects.

Brainstorm; brainstorming new ideas of tech is one of the characteristics of a tech starter. As a tech starter, you need to be creative in the sense that you need to think of new ideas of technological result to start a project of building something.

Learn about Technological Skills; as tech starter, you need to keep learning. Without learning, you will stop growing. So tech starters need to keep learning everyday about technology and how to improve the quality of people's life with what are they are building

up.

Don't Despair; Tech starters are people who never give up easily, they are determined and disciplined. As the saying goes; "Winners are people who never quit even though they fail." As a tech starter, you will definitely fail in one way or the other as you begin your journey into the tech. Because tech is not easy, it takes determination, discipline, endurance and commitment. If you read stories of great people in the world today who have built tech companies or achieved something you see today had never despaired in their cause of struggles. So don't give up on your dream. Keep working towards it.

Learn from Mistakes and Accept Correction; as a tech starter you need to learn to accept correction and learn from your mistakes. A lot of people have quit because of not wanting to learn and correct their mistakes. As humans, we are imperfect and need help in one way or the other. When you start building something and is not working, look back and see where you have gone wrong and correct it.

Research; Tech starters are researchers and developers. As a tech starter you need to keep researching every day to learn new things and new ways of solving problems.

SOME SKILLS ONE NEEDS TO START A TECH

As a beginner in tech, one needs to have some skills to be able to find

it easier in buildup. For every work requires skills for it to function efficiently and productively. Both hard and some soft skills are required because in tech, you will meet a lot of people that you have to relate with, either to learn from them, be mentored or work with them. Factually, these skills help one to succeed in the field of tech as a tech starter.

Some of the skills include;

1. Ability to use some computer-based applications
2. Analytical skills
3. Problem solving skills
4. Ability to learn and work under pressure
5. Time management skills
6. Ability to work with team
7. Attention to details
8. Perseverance
9. Online security and privacy skills
10. Communication skills
11. Creative thinking

WHAT A TECH STARTER SHOULD AVOID

As the saying goes; "There is first time for everything." As a beginner in tech, a lot of people have made mistakes that have led them to a miserable failure. As a tech starter, going into tech for the first time is really challenging because one is new to it. In this very segment, the

following are some of the things tech starters should avoid for the success for their tech businesses and companies. They include the following;

1. Multitasking; a tech starter should focus on one tech at a time.
2. Overworking a Mentor; Make your own research and findings for self-improvement.
3. Working Alone; Technology is a field that needs one to work with people. Because as a beginner in the tech, one will need other experienced people in the field to help them in some areas of complexity.
4. Not Practicing; as the saying goes; "Practice makes better." As a tech starter, one should not only know the theoretical aspects of technological field, but practice the practical aspect for self-improvement.
5. Not Participating in Tech Events; People in technology mostly organize hackathon -- a gathering of people to brainstorm ideas and bring out a solution to a problem. As a tech starter, one needs to attend events like that because it helps to network with like minds, learn, share ideas and get to have opportunities to explore more in one's tech companies.

Chapter 3

Tech Business Ideas

What is a tech business?

Tech businesses provide products and services that have applications across multiple industries — but at their core, they pertain to the research, development and distribution of technology-based goods. This includes businesses that manufacture electronics (like Apple), create software (like Salesforce), and provide services relating to information technology (like Google) and more.

The best part about our technology business ideas is that they don't require a lot of overhead—you can start small and grow over time. However, you will need some level of technical knowledge to be able to successfully start a business in the industry. If you don't have any tech experience, consider starting with a coding boot camp.

Around January, 2018, Nerd Wallet published 25 tech business

ideas for 2022. It is a list of tech business ideas that crosses industries poised for disruption. If one is looking to start a business with high earning potential, they probably have to look into some tech business ideas. In 2019, the estimated economic output of the technology industry was $1.8 trillion, comprising over 10% of the national economy, according to CompTIA. What's more, the average successful startup exit (via either acquisition or IPO) has sat at $242.9 million since 2007.

However, for every successful startup exit, there are hundreds if not thousands of startups that have failed. So if one is an entrepreneur hoping to hit it big in the technology sector, they need to start with a strong tech business idea. In an industry defined by innovation and disruption, what constitutes a "good" tech business idea is constantly changing. That's why we've compiled a list of tech business ideas that are poised for extreme growth in the coming years.

Here are some of the top tech business ideas, including some recommendations from tech entrepreneurs themselves;

1. Food tech; Phil Strazzulla, founder of HR Software Company. Strazzulla sees the food tech sector as a major growth industry in the coming years: "Companies like Beyond Meat are just the beginning of businesses engineering ecofriendly and healthy food that is as delicious as our current diet. The science is now there, and the

market for next-generation food is literally in the trillions of dollars, and it grows just as quickly as the world's population."

2. Web design; One tech business idea that will never go out of style is website design. That's because every business needs a professional-looking website in order to appear reputable and build their brand. Web design encompasses a range of different services, including graphic design, interface design, copywriting, UX design, and SEO. According to IBISWorld, the web design business has grown at a rate of 6.6% over the last five years, and generated $38 billion in revenue in 2019, meaning you can rely on there being a market for this tech business idea for years to come business idea for years to come.

3. Extended reality; It is a technology that encompasses either augmented reality, or AR, and virtual reality, or VR, technologies. Kenny Trinh, editor of tech review publication Net Books News, sees extended reality technology proliferating in the coming years. "In 2020, we'll see more and more businesses applying extended reality to their brands to stand out from the competition and deliver a better customer experience," says Trinh "In fact, some businesses have been doing that already." Trinh points to the eco-friendly water packaging project W-in-a-Box, which uses AR to further explain the benefits of their product.

4. Robotics; It is a bit of a catch-all term that encompasses mechanical engineering, electronic engineering, information engineering, computer science and other related disciplines. The goal of robotics is to create machines that can move and react to sensory input. According to Statista, this industry is expected to grow from $80 billion in annual revenue in 2019 to over $200 billion in annual revenue by 2025.

5. Customer Experience Management or CXM; Ian Kelly, VP of operations for a CBD oil company called NuLeaf, believes customer experience management platforms like ZenDesk will soon make customer relationship management platforms, or CRMs, obsolete. "While a CRM can help you manage customer details, a CXM unifies all sales, marketing and customer service conversations into a single silo so that your customers are treated like the loyal fan-base they are," says Kelly continued "No more hitting your customer over the head with repeat promos, selling them on services/products they already have or letting them slip through the cracks when they've bought and never been properly onboarded."

6. Influencer marketing; It is an industry enabled by social media platforms like Instagram involving endorsements and product placements from individuals or organizations who possess a certain level of expertise or social influence in their respective fields. While

not just anyone can be an influencer, if you possess some level of unique knowledge or a lot of charisma, you can launch a business by gathering a social media following and hiring an influencer marketing agency to connect you with brands. On the flip side, you can also launch a business focused on connecting brands with the right influencers for their products and mission.

7. Content automation; With content and social media becoming an ever-growing part of many businesses' marketing plans, Gleb Myrko, an analyst at the market research firm Freedonia Group, believes content automation software presents a great opportunity for tech entrepreneurs.

"Businesses today have accounts on all different social media channels like Instagram, Facebook, TikTok, etc. All of these channels require different approaches to content planning, content production and account management and analytics," says Myrko. "There's still not a widely applied tool for omnichannel management, promotion and analytics for the most popular social media. We need an all-in-one hub where marketers can analyze data/performance, as well as manage and promote their accounts on different social media channels in a more centralized, convenient and effective manner."

8. Artificial intelligence; The term "artificial intelligence" is used to

describe technologies pertaining to machine learning, computer vision, natural language processing and more. Although artificial intelligence is a technology that has been around for quite some time, as it becomes increasingly sophisticated, its market potential is growing as well. Statista reports that the industry grew by 154% in 2019 alone—making it a great tech sector to build a business around.

9. Podcasting; If you've been paying attention to innovations in content over the past few years, you're probably aware of the exploding popularity of podcasts. Today, 51% of the U.S population has listened to a podcast, and podcaster Dre Baldwin sees podcasting's prospects only increasing in the coming years. "Entrepreneurs need to start building their podcast content library ASAP," Baldwin say "More and more people are consuming media on the go; audiobooks and podcasts are at the forefront of this. Any entrepreneur or business entity that wants the attention of consumers needs to be in their ears, literally."

10. Streaming service; Services like Netflix and Disney+ get most of the attention when it comes to streaming services, but there is plenty of opportunity to start a streaming service for more niche content. For example, you can create a streaming service where users can upload instructional videos or a streaming service designed

specifically for children' s content. You could also develop a platform for live streaming (like Twitch) or streaming music (like Spotify). The global outlook on the streaming service industry is overwhelmingly positive. In 2019, streaming services generated $25 billion in revenue. By 2025, that number is expected to rise to $30 billion, according to Statista.

11. 3D printing; One of the more exciting technologies developed during the 2010s is 3D printing, which allows users to build a three-dimensional object from a computer-aided design model. Shayne Sherman, CEO of TechLoris, believes 3D printing will have increased importance in the next decade as the technology continues to become more sophisticated. "There will always be the need for production companies, but just as the advent of the assembly line changed production, so too has 3D printing," Sherman says "The ability to manufacture whole components in single pieces has created a serious demand, especially in the medical fields. This demand means that 3D printing companies are set to grow exponentially, and if you can get into the business, it's a solid choice for the coming years."

12. E-commerce; It is another technology that has been around for a while, but still has growth potential. Over the last year, Statista reports that e-commerce sales grew from $500 billion to nearly $550

billion. If you have a unique idea for an e-commerce store, you can launch your own ecommerce business from the comfort of your home. No product in mind? Not to worry; drop shipping allows you to start an e-commerce business with products you are not responsible for warehousing or shipping. If you want to grab a bigger share of the market, you could also take the time to develop your own e-commerce platform or marketplace. Just keep in mind that the e-commerce platform space is already dominated by giants like Shopify and Amazon. Therefore, if you want to start your own e-commerce platform, we suggest focusing on a niche market.

13. Portable charging devices; Mobile devices go with us everywhere nowadays, but having your phone battery die on you while you’ re out is still a far too common problem. That’ s what’ s driving the growth of the portable phone charging industry.

According to data published by BCC Research, the portable charging device market is expected to grow by 6.6% year over year from 2017 to 2022. Growth is driven by the fact that many newer phone models have lower battery capacity. "Growing urbanization, rising disposable income and increasing mobile phone penetration will boost the mobile charger market around the globe," according to the report's author Mohammed Javed “Increasing penetration of high-specification electronic gadgets/devices that drain batteries at

faster rates will further boost the mobile charger market in the near future."

14. Publishing e-books; an e-book is a book made available in digital form. If you are a writer, there is a growing market for books published online. Businesses are creating e-books as a way to market their brand, and aspiring authors of fiction and nonfiction publish e-books as a way to reach more customers and grow their readership. In 2019 alone, revenue generated from e-books topped $1.3 billion, and that number will rise to $1.6 billion by 2024, Statista reports.

15. Fitness Tech; Technology has applications in nearly every industry—including the fitness industry. We've already seen new technologies like Fit Bit, Peloton and Strava change how people exercise, and more innovation is on the horizon. That's the belief of Jared Weitz, founder of United Capital Source Inc. "Fitness technology is an area of continued growth. Whether it is creating products like fitness trackers, wireless earbuds or smartwatches that have multiple functions, the market is constantly seeking new gear and technology," Weitz says. "This niche is expanding from tangible fitness products to the apps and data that marry the physical and digital together. Combine a high-tech device with an app related to exercise or diet and you will be setting yourself up for success in 2020 and beyond."

16. Online teaching; do you know a foreign language? Can you build a treehouse? Do you cook really good soup? Then you can make money sharing your knowledge and expertise online. Thanks to services like Teachable and Udemy, teachers can now build their own online classes, sell them to students and teach the entire class online. If you're a good teacher and know how to market your class, you can earn a livable wage by teaching your skills to others through the internet.

17. Mobile Application Development; every business needs a website. And the way the market is trending, soon every business will also need their own mobile app. This presents an exciting opportunity for individuals skilled in app development. Successful companies like Braze and Leanplum have built their entire business around developing apps for others. There is really an endless supply of app ideas. There were 194 billion app downloads in 2018 alone, and that number is only expected to climb. So strike while the iron is hot.

18. Search Engine Optimization Consultant; Google is still an essential part of many business's marketing strategies. They need to be able to appear as a top result in Google Search for keywords related to their business. That means they need someone who is skilled in search engine optimization, or SEO, to help them. Some

businesses hire people to perform SEO in-house, but many organizations also work with freelancers or third-party agencies to implement an SEO strategy. If you can train yourself in SEO and keep up with its ever-changing trends, you can start a business providing SEO services to other organizations.

19. Social Media Consultant; If you're not into SEO, but are good on social media, you can work with businesses to help them generate likes, shares, retweets, followers, comments, clicks and more as a social media marketer. In this role, you' ll consult with companies and help them manage their social profiles, spread content across the web and build their brand. What' s more, the startup cost to be a social media marketer is minimal and can be done from your own home. Just be sure to buff up your social media skills and keep up with the latest trends and platforms.

20. Drone videography; if you own a drone and know how to use of camera, there' s a market for your services. Commercial and residential real estate agents are increasingly using aerial shots as a way to market their buildings and property. You can find real estate agents in your area using platforms like Zillow. Then reach out and offer up your services. Other industries, such as agriculture, events and more have uses for drones, as well.

21. Cybersecurity or IT Consulting; Businesses today are increasingly threatened by cyberattacks, making the need for IT consultants greater than ever. As an IT consultant, you can help businesses evaluate their security systems, run tests and offer advice on how they can better protect themselves from cyber hackers. More generally, an IT consultant can help businesses set up their computers and troubleshoot any general issues.

22. Venture capitalist; A vast majority of tech startups are backed by venture funding. If you have an interest in the tech space, but don't have any technical knowledge yourself, you can try raising some money and becoming a venture capitalist or angel investor. Similar to being an influencer, a venture capitalist isn't something you can simply become overnight. That's because being a venture capitalist requires allowing others to trust you with their money. You need to start small and make some solid investments in order to make a name for yourself. Many independent investors join a VC fund for a while before striking off and starting their own fund.

23. Startup incubator; Another way to get involved in the tech world without having a lot of technical experience is to create your own startup incubator. The job of an incubator is to help startups plan and launch their business successfully. Services provided may include management training, office space and mentorship

opportunities. Of course, you'll need some background in business to be able to successfully launch an incubator. The cost of creating your own incubator and attracting founders may also be difficult to muster. Many incubators start small and grow over time once they have successfully helped multiple startups enter the market.

24. Antivirus developer; It is a highly specific sort of tech business idea that pertains to the creation of antivirus software that can help businesses protect critical data. Antivirus software can be created using a variety of different programming languages. The overall goal of an antivirus is to detect and remove malware before it impacts a computer's systems. Start networking with local businesses in your area to find out if there's a need for this service.

25. Domain name broker; Being a domain name broker is similar to being a stockbroker, except instead of stocks, you sell domain names. To get started you need a little capital to buy some domain names. You'll then need to educate yourself so that you'll be able to predict domain name requirements in the future. So like most of the businesses on this list, it will take some work to get started. But everyone needs a domain name, so there will always be a market for this service.

OTHER TECH BUSINESS IDEAS ARE:

1. Animations; It is a digital display technology that processes moving objects on screens. Animations gives life, actions, emotions and speaking ability to non- living objects and animals via computer in forms of videos or images. In animations objects are been manipulated to be displayed as moving ones. A person who does animations is called an animator, and an animator creates artworks for cartoon films and images, television, video games etc.

2. Graphic design; It is the art of technology of using or combining of pictures and texts in a creative design to pass a message with specific aim to a target people. A graphic designer designs things such as flyers, brochures, magazines etc. So as to convey information to someone or for something. Graphics designers also create these designs in forms of videos. In graphic designing apps and software like the Pilexlab, Canva pro, Photoshop, Corel draw and lots, are used. Some types of graphic designing are; branding designs, website designs, publishing designs and products design.

3. Software development; It is the creation of computer applications that allows users perform specific tasks. It involves the process of creating, designing, testing, maintenance etc. of the application. A person who creates software is called a software developer. A software developer researches, thinks, uses

mathematical skills, analyzes, creates code and brings out a computer software to help users solve a specific problem. Some of the software includes; Microsoft word, Adobe Photoshop, VLC media player and image editor.

4. Products designing and

5. Manufacturing of cars and computer spare parts.

Chapter 4

How Can I Start Tech?

Technology has come to stay as part of human life and to be more productive today, there must be technological involvement. Tech covers almost every area of life ranging from security, health to even agriculture etc.

A lot of people have idea of technology but don't know how to start and that has been one of the major challenges people face in this country. Starting technology is not easy especially in a community where there are limited resources for building tech and low level of interest and participation in the tech programs. These have been the major problems of Nigeria especially the in the North East. We need creative people that have interest and passion for tech to pick up this challenge. Therefore, this chapter will open up how to start technology that will the help the country at large.

HOW TO START TECH

1. Idea; Anything that has been built in this world today first started with an idea. If you have interest and passion for tech and you want to start it, then you have to ask yourself the idea you have. Your idea can be of anything either building a tech or having a tech company. Idea gives birth to innovation or invention and if you have an idea to start a tech then go for it, it is worth it.

2. Interest and Passion; After having the idea of starting a technology, you need to also ask yourself whether you have interest and passion for what you want to start. If you don't have passion for what you want to do, you will realize that after venturing into it you won't be happy doing it, and sometimes people go into tech not because of interest or passion but because they feel like or heard that there is money in tech. Then They will begin to get frustrated and probably end up crashing in the tech after venturing into it.

3. What kind of Tech to Build; After having the idea and passion for the tech, think of what kind of technology you want to start or build. Look around you if there are a lot of problems that need technological solutions. Brainstorm ideas on tech you can do whether it's invention or innovation. First, write it down in your book and keep working on it. Get to ask people question on what kind of tech they think Nigeria needs. There are different areas of

tech that someone can venture into. So find out what you know you can do, find out what you are good at, what you love and do it.

4. The Problem to Solve; When starting or building a technology, one has to ask themselves if what they are building is going to solve a problem or not, whether the technology they are building will be of harm or of good to humans. Most technologies today have really served humans well by making life easier for them. So when building a technology, build something that will help solve a problem rather than creating one.

5. Start Something; After having the idea, passion and knowing what kind of tech to build get up and start something no matter how small it is. Start learning and practicing, go for training, get tutorials, read books, connect with people that are interested in what you are doing and can help you built your own tech. Get the right resources you need and practice what you have learnt.

6. Have Something to Show; As a tech starter, after thinking of what you want and how to do it. Build a prototype, sample or something to show to potential clients, investors and people that will help you. Let people see what you have done so far. People sometimes show interest in what they see rather than what they hear. For example, you have started developing websites or products

designing, have some samples of the websites and products you have designed for people to see. Example if as a tech starter you want to start building robots mentors or people with experience in that field can help you know the kind of materials use in building it and how/where to get them. Apart from that, you will know how avoid some mistakes and how to handle problems in relation.

7. Research and explore; As a tech starter, you need to keep researching and exploring more resources, ideas and things about technology. Learning, practicing and mentorship are not enough. You need to work hard by researching and learning the new trend of technology. Without you researching and exploring more about technology you will come to realize that you have been left behind in some areas.

Chapter 5

Some Technological/Scientific Inventions and Their Inventors

These are some of the technological and scientific inventions and the names of their inventors including the year of the invention.

1. Smart phone - IBM - 1992
2. Webcam - Quentin Straford Fraser and Paul jardetzky - 1991
3. World Wide Web (www) - Tim Berners- lee and Robert cailliau - 1989
4. Search Engine - Alan Emtage - 1990
5. Laptop - Adam Osborne - 1981
6. Python - Guido van Rossum - 1991
7. Google - Larry page and Sergey Brin - 1998
8. Email - Ray Tomlinson - 1971
9. Facebook - mark Zuckerberg - 2004

10. Yahoo - Jerry yang and Daniel filo – 1994
11. C++ - Bjarne stroustrup - 1983
12. Electricity - Benjamin Franklin - 1759
13. Thermometer - Gabriel Fahrenheit - 1714
14. Camera - Nic'ephone Ni'epce - 1816
15. Airplane - wright brothers - 1903
16. Mobile phone - martin cooper - 1973
17. Telephone - Alexander Graham bell - 1876
18. Television - John logie Baird - 1927
19. Calculator - Balise pascal - 1642
20. Rocket Engine - Robert Hutchings Goddard - 1882-1945
21. X-ray machine - Willian Rontgen - 1895
22. Air conditioner - Willis carrier - 1902
23. Refrigerator - William Cullen - 1927
24. Radio - Guglielmo Marconi - 1895
25. Electric bulb - Thomas Edison - 1879
26. Electric blender - Stephen poplawski - 1921
27. Piano- Bartolomeo cristofori - 1709
28. Microwave oven - Percy-l Spencer - 1945
29. Modern type writer - Christopher Lathan Sholes - 1868
30. GPS (Global positioning system) - Roger L Easton
31. Electric iron - H.W Seeley – 1882
32. Microphone - David Hughes - 1878

33. Type writer - C. Sholes - 1868
34. Microsoft - Bill gates and Paul Allen - April 4, 1975
35. IP Address - Robert E Kahn - may 1974
36. Telescope - Galileo - 1609
37. Animation - Emile Reynaud - 1892
38. Elevator - Elisha G Otis - 1852
89. Helicopter - Igor Sikorsky - 1939

Chapter 6

Some Quotes About Technology

1. Technology is anything that wasn't around when you were born (Alan Kay, Computer Scientist)
2. Just because something doesn't do what you planned it to do doesn't mean it's useless (Thomas Edison, Inventor)
3. It has become appallingly obvious that our Technology has exceeded our humanity (Albert Einstein, Scientist)
4. The human spirit must prevail over Technology (Albert Einstein, Scientist)
5. The real danger is not that computers will begin to think like men but that men will begin to think like computers (Sydney Harris, Journalist)
6. Science and technology revolutionize our lives, but

memory, tradition and myth frame our response (Arthur Schlesinger, Historian)

7. it's not a faith in technology, it's faith in people (Steve jobs, Co-founder of Apple)
8. Technology is a useful servant but a dangerous master (Christian Lou's Lange, Historian)
9. The advance of technology is based on making it fit in so that you don't really even notice it, so it's part of everyday life (Bill Gates, Co-founder of Microsoft)
10. One machine can do the work of fifty ordinary men. No machine can do the work of one extraordinary man (Elbert Hubbard)
11. Getting information off the internet is like taking a drink from a fire hydrant (Mitch Kapor)
12. The internet is so big, so powerful and pointless that for some people it is a complete substitute for life (Andrew Brown)
13. For a successful Technology reality must take precedence over public relations, for nature cannot be fooled (Richard P Feynman)
14. The real problem is not whether machines think but whether men do (B.F Skinner, Psychologist)
15. Technology is a gift of God after the gift of life, it is perhaps the greatest of God's gifts. It is the mother of

civilization, of arts and sciences. (Freeman Dyson)

16. Success in creating AI would be the biggest event in human history. Unfortunately, it might also be the last, unless we learn how to avoid the risks. (Stephen Hawking)
17. If you think Technology can solve your security problems then you don't understand the problems and you don't understand the Technology. (Bruce Schneider)
18. Technology is nothing what's important is that you have a faith in people that they are basically good and smart and if you give them tools, they'll do wonderful things with them. (Steve jobs)
19. It not that we use Technology, we live Technology (Godfrey Reggio)
20. Information technology and the internet are rapidly transforming almost every aspect of our lives some for better, some for worse (John Landgraf)
21. Technology is best when it brings people together (Matt Mullenweg)
22. To master a new technology you have to play with it (Jordan Peterson)
23. The purpose of technology is not to confuse the brain but to serve the body (William S. Burroughs)

24. Technology is always a two- edge sword. It will bring in many benefits, but also many disasters (Alan Moore)
25. Stone age, bronze age, iron age we define entire epics of humanity by the Technology they use (Reed Hastings)
26. The only constant in technology industry is change (Marc Benioff)
27. Many people mistakenly think a new technology cancels out an old one (Judith Martin)
28. I always say be near science and technology and you will never fail (Arunachalam Muruganantham)
29. Technology and social media have brought power back to the people (Mark McKinnon)
30. As the world has changed through globalization and Technology it has left many feeling left behind (Chuka Umunna)
31. The key to making things affordable is design and Technology improvements, as well as scale (Elon Musk).
32. Technology is destructive only in the hands of people who do not realize that they are one and the same process as the universe.
33. The easiest way to stop piracy is not by putting antipiracy Technology to work, it's by giving those people a service that's better than what they're receiving

from the pirates (Gabe Newell)

34. Study hard so that you can master Technology, which allows us to master nature (Guevara)
35. The number one benefits of information technology is that it empowers people to do what they want to do. It let people be creative, it lets people be productive, it lets people learn things they didn't think they could learn before, so in a sense it is all about potential (Steve Ballmer)

Chapter 7

Facts About Technology

10 facts about technology use in the emerging world BY JACOB POUSHTER, an associate director focusing on global attitudes at Pew Research Center.

The Pew Research Center surveyed thousands of people across 32 emerging and developing nations about their technology use and how the rising influence of the internet affects their daily lives. But beyond the larger findings, we found some notable data points about specific countries that might have been lost in the fray.

1. Nations Skipping the Landline Phone; Almost no one in Nigeria, Ghana, Bangladesh and Uganda owns a landline telephone. Many people worldwide are skipping the fixed telephone line that many Americans grew up with, and this fact is most apparent in

many emerging and developing nations. Only 1% of the population in Nigeria, Ghana, Bangladesh and Uganda say they own a working landline telephone in their household, while 89% in Nigeria, 83% in Ghana, 76% in Bangladesh and 65% in Uganda own cell phones. This compares with 60% landline penetration in the U.S.

2. Chinese Internet Users Love to Shop; About half of online Chinese (52%) have used the internet to buy products in the past 12 months. Given the size of the online Chinese marketplace, this goes a long way in explaining the meteoric rise of commerce giants such as Alibaba and Baidu.

3. Filipinos Love Social Networking; Among adult internet users in the Philippines, 93% say that they use social networking sites, such as Facebook and Twitter. This is the highest of such percentage across the emerging and developing countries surveyed and greater than the 74% of internet users in the U.S. who use social networking sites. Roughly seven-in-ten of those Filipino social networkers use these platforms to share views about music and movies, while half talk about sports.

4. Indians and Bangladeshis Use the Internet for Job Hunting; Very few people in India and Bangladesh use the internet – only 20% and 11% respectively. But among those who do, job searching

is a popular activity. Majorities of internet users in Bangladesh (62%) and India (55%) say they have looked for a job online in the past year, the highest rates among the 31 countries surveyed that have enough internet users to analyze.

5. Young Thais are Internet Enthusiasts; In every country we polled, younger people ages 18 to 34 are substantially more likely to say they use the internet than those who are older. Especially large differences occur in Asia, and particularly in Thailand, where 83% of 18- to 34-year-olds are online, but only 27% of those 35 and older are.

6. Politics is a Big Social Media Topic in Lebanon; Among Lebanese who use social networks, an astounding three-quarters say they use the platform for discussing politics. Similar levels of political participation occur among social network users in Egypt (66%) and Jordan (63%). Across all the countries surveyed with sufficient numbers, only a median of 34% say they talk politics using social media, including 16% of Filipino and Vietnamese social networkers and 19% of Indonesians.

7. Ukrainians Get their Political News Online; Overall, a median of 54% of internet users across emerging and developing countries surveyed use the internet to get political news and information. But

in Ukraine that figure is much higher: Eight-in-ten internet users do so. The survey was fielded after the ousting of President Viktor Yanukovych from office in early 2014 and toward the beginning of the ongoing conflict with Russian-backed rebels in eastern Ukraine, meaning many Ukrainians followed those news events online. However, only 53% of Ukrainians have access to the internet.

8. Nearly Eight-in-ten Russians Own a Computer; Due to the rise of smartphones, many people in emerging and developing nations access the internet from a device other than a personal computer. But about eight-in-ten Americans (80%) and Russians (78%) have a working computer in their household. In contrast, only 3% in Uganda say they have a computer in their home.

9. Venezuelans Like Taking Pictures and Videos with their Phones; Overall, Latin Americans (just like in the U.S.) are the quite keen on capturing the world around them, with more than six-in-ten mobile owners in Chile, Mexico, Argentina, Brazil and Nicaragua saying they have taken videos or pictures with their phones in the past year. In Venezuela, this is particularly common: Three-quarters of cell phone owners (who constitute 88% of the adult population) use their device to take pictures or video.

8. Many Poles Access Medical Information Online, Especially Women; More than six-in-ten internet users in Poland (64%) say they have gotten health information online in the past 12 months. This includes 72% of female internet users, but only 56% of male users. Similar gender gaps are found in the U.S., and also in Russia and Ukraine.

21 Fun Technology Facts You Possibly Never Knew By the TLP Technology Ltd. 2021

Domain Names

Domain Names were FREE prior to 1995, the US National Science Foundation granted permission for companies to charge for a registration for the first time in that year. Think domain names are expensive? Well they started out at $100 for two years, that's approximately $180 today accounting for inflation.

Pigeons

A test using pigeons carried out in rural England in 2010 proved pigeons were faster in sending data than the internet. Where it took 90 minutes to download a 4 GB file through a router, a pigeon carrying a 4GB USB stick containing the same file, setting off from the same location as the server took 60 minutes to receive and upload to the same specified computer, proving the internet speed

was 30 minutes slower.

Google

Google was originally to be named Googol which is a number; 10 to the power of 100. But due to a spelling error the name Google was registered, however the founders preferred the name and obviously stuck with it.

Apple

If you are a smoker and use Apple products, then you quite likely void your Apple warranties. Yes, you really should read the fine print, many customers who have returned their new computers and laptops to the manufacturer for a repair under warranty have been left speechless when told they have been in breach of their warranty and they would have to pay for the repair because they had been smoking while using the device.

Technology Degrees

Most technology degrees are outdated long before the students graduate. The information surrounding technology doubles pretty much every two years, so by the time someone starts their degree until they finish, they could well be up to 6 years behind in their understanding.

Reading

We spend more time reading from a screen than we do from a book or newspaper, and I'm not saying that because we spend more time on a computer and mobile devices. No, in fact on average it takes us 10% longer to read exactly the same content on a screen than on paper, generally due to less distractions.

Video Games

Do you think you spend too much time in front of a computer? Well the average 21-year-old would have already spent at least 5,000 hours, or over 208 days just playing video games.

Precious Metal

Hundreds of millions of pounds, worth of precious metals such as gold and silver, are thrown into landfill each and every year, predominantly contained in the smartphones and devices we no longer use. Sadly, even when taken to a recycling Centre, if it is too difficult and therefore not costly to recycle, it will end up in landfill.

USB Devices

Are you doing it wrongly? Survey suggests 86% of us are! Come on, own up, how many of you keep trying to plug in your USB devices upside down? Yeah, I thought as much.

Internet

More than 1.5 million Americans still use a dial up internet. Even with Elon Musk's new super-fast satellite internet Starlink, many rural places in the states are still stuck on 90s technology to serve their needs. Though there are government plans to close this gap, many say they just wouldn't be able to afford the monthly contracts for the faster internet.

Alexa

Every conversation you have with your friends is stored in the cloud for life. Frightening thought, especially when friends or family are forced into a contract with Amazon they hadn't read, agreed to or were likely ever made aware of.

Fastest Internet

The fastest internet in the world is 17,800 times faster than the current standard high speed internet connection, and according to its UK and Japanese based developers it could download the entire Netflix library in under 1 second! The best internet speeds are currently between 500 to 1000+ Mbps whereas this technology transfers data at a world breaking 178 terabits per second.

Viruses

Between 300k to 400k malware and viruses are found each and

every day with up to 90% of emails containing some form of virus.

Emails

We all get bombarded with emails, and not all are necessarily scams, much of the dodgy spam is filtered out to the junk/spam folders with the odd phishing email slipping through the net, the vast majority of what we then call spam is usually people or companies trying to sell us stuff which we're obviously not interested in. However even with that in mind, it still surprises me that for every approximately 12 million emails sent only 1 receives a reply.

Divorce

More than 30% of divorces occur due to Facebook as more people find ways to start an argument with their partner, or find out their partner is up to no good.

VCR

The very first VCR was the size of a church organ keyboard. The Ampex Corporation had been working on a technology that recorded onto magnetic tape as early as 1938, however after many years and vast amounts of money spent the project was about to be shelved until they made one last final attempt which led to their breakthrough. In 1956 the Ampex VRX-1000 was born and it caused a stir, the only thing holding the Ampex back other than its

sheer size was its astronomical price tag of $50,000, that's $502,000 in today's money.

Garages

Apple, Amazon, Google and Microsoft all started out on a shoestring budget out of garages.

Photographs

Ever wondered why people in photograph from the 1800's looks so miserable, well you would too if you had to sit perfectly still for more than 8 hours. Yep the first images taken in the 1820s required the individual or object to remain stationary for 8 hours, so if you originally thought it was because looking serious was the one thing when taking photos back in the era, then that possibly wasn't the initial reason as to why, trying to keep a constant smile for more than an hour is far more challenging than making no facial expressions at all.

Firefox

The fox in the Firefox logo is not a fox but a breed of cat known as the red panda which resembles a bear more than it does a fox.

Insurance

The Apollo 11 astronauts couldn't afford life insurance as inevitably

the risks were extremely high and no insurer really wanted to take that risk, so instead Neil Armstrong, Michael Collins a Buzz Aldrin signed a whole load of posters, images and other memorabilia before they set flight so that their families had a means to making money if things didn't go according to plan.

Toilets

More people in the world have access to a smartphone than a toilet. Surprising as this may be it's a shocking reality, of the approximate 7.7 billion people on the planet, 6 billion own a phone while only 4.5 billion have access to a toilet.

Currency

Thinking about buying Cryptocurrencies? Well you in theory already own a load of it, unless you keep your money under a mattress it's likely that more than 92% of your money is digital. Only approximately 8% of world currencies are in physical form.

Printer Ink

Have you noticed how printer ink cartridges seem to run out quicker than they used to, even though you are not printing anything more than you would ordinarily? You may be thinking this is due to shrinkflation that you're not actually getting the same amount of ink inside the cartridge as you used to. It is however more

than likely that the content of the cartridge has remained the same but you have simply chosen to use a different font type.

Using a different font can increase printer ink use by up to roughly 20% on average and obviously that can be a lot more. Most businesses notice their printer ink cartridges run out quicker after the company has usually had a redesign and one of those main changes being their font type.

Processing Speed

Currently the fastest known fully functioning supercomputers are us, or our brains at least. Did you know your brain is capable of computing up to 38 thousand trillion operations per second? Attempting to put that into some form of perspective as it hurts my brain thinking about it, that's 413 times faster than any supercomputer.

However, though this is certainly impressive and instils one with confidence, Quantum Computer testing has shown that quantum processors are potentially hundreds of millions of times more powerful.

Computers

Prior to the 1960s personal computers were known as Electronic Brains.

Keyboard Keys

There are several interesting facts about your keyboard keys however the two which I find the most amusing are the name QWERTY and why it was created. Many of you would have heard and used the term qwerty keyboard and we know what one is, most of us use one every day, but did you know that first and foremost it was designed to not help you to type faster but to slow you down. Back in the early days of metal typewriters a common occurrence was keys sticking due to the keys/letters position and speed at which the keys were pressed, so in order to prevent the keys from sticking they were reordered in a means that would avoid the most frequently used consonants and vowels from overlapping and therefore getting stuck when pressed. A happy coincidence was it helped to slow down the typist which created less opportunity for keys to be simultaneously pressed as they spent a fraction longer looking for the right keys to press. The name QWERTY, which will surprise a lot of people as it's always been staring them in the face, comes from the first 6 letters on the keyboard.

Internet Usage

Would you believe that despite only 45% of the Chinese population having access to the internet, there are more people in China using the internet than there are anywhere else in the world, that's approximately 630 million people?

YouTube

The most viewed video on YouTube and possibly the whole internet is Gangnam Style by South Korean based Psy, the catchy song which became a global overnight success almost 10 years ago has so far accumulated well in excess of 4 billion views and rising.

Internet Traffic

Sorry to disappoint you folks but 51% of your website's visitor traffic is from bots. Other than the likes of Google and Bing bots which are not generally recorded by tracking software like Google Analytics, the largest proportion of visits to your websites are from autonomous programs created by cybercriminals that search networks and websites for doorways in.

Dating

It may surprise you to learn that YouTube started life as a dating platform, the idea was people could upload videos of themselves in the hope this would improve their chances of finding love, but as nobody took to the concept or likely knew that's what YouTube was for, it slowly just evolved into the powerhouse of a video platform that it has become today.

Smoking

Before Casio became the world leader in electronic calculators,

Tadao Kashio had invented and made a fortune from a cigarette device called the Yubiwa pipe. The Yubiwa pipe which is still made today is a ring with a tiny pipe attached that is worn on the finger, the cigarette is slotted into the pipe and smoked from there. The reasons for its invention and popularity was because it freed up the person's hand so they could get on with their work while smoking and as tobacco and cigarettes were so expensive it allowed people to smoke their unfiltered cigarettes right to the end without burning their fingers.

Nokia

Something you likely wouldn't associate Nokia with is toilets and hygiene, however back in 1865 Nokia was nothing more than a pulp mill literally manufacturing pulp for items such as toilet paper.

Railway

You will be amazed to learn that the first known form of rail transportation was up and running more than 2,600 years ago in the 6th century in Ancient Greece. A 5-mile track overland from the coast to the Isthmus of Corinth allowed vessels to travel from the sea across land to another section of the sea, avoiding what would have otherwise been dangerous territory to circumnavigate. The track known as Diolkos was in service for more than 650 years.

PayPal

PayPal was once voted one of the top 10 worst business concepts. Believe it or not back in 1999 PayPal was viewed by many as a crazy idea that would never succeed.

Dry Eyes

Do you find your eyes are dry and sore at the end of a working day in front of a computer? If so it isn't necessarily because of the LED monitor itself or the light that it emits, but the fact that we subconsciously blink far less when staring at a screen, 7 times per minute as opposed to 22 times per minute to be precise. So if you are one of those individuals who suffers, remind yourself to blink more often when in front of your computer.

Robots

The first known robot known as the Automa cavaliere was created in 1495. Though we cannot be 100% certain who designed and constructed the humanoid automaton, it has been attributed to Leonardo da Vinci due to the discovery of his research on the concept. The Automa could stand, sit, raise its visor and move its arms.

Wikipedia

Are you aware Wikipedia is downloadable? Well it is and here is the

link:https://en.wikipedia.org/wiki/Wikipedia:Database_download just make sure you have enough memory!

Tech No Support

A staggering 30% of Techies lie about their jobs to friends and family to avoid giving technical support for free.

Chapter 8

Some Terms Used In Technology And Their Meanings

When new into Tech, there are different types of terms that are commonly used in technology which sometimes as a tech starter you might not know them. In this chapter we will look at some of the common terms used in technology and their meaning.
Written: By Kelli Smith

Skill crush Blog
This are some of the terms he wrote that someone should know when they new to tech.

CONTENT CURATION
Even if you're new to tech, chances are you're not new to social media. Content curation is the process social media sites use to

gather and present content (articles, links, videos, images, etc.) that are relevant to a specific topic or a user's area of interest. Content can be selected manually by a person designated as a curator, or it can be gathered through automated programs that track things like upvoting, likes, hashtags, or analysis of a user's previous online activity.

ENGAGEMENT

Engagement is the term used for likes, shares, comments, and other interactions with a business' social media presence. It's one metric companies use to measure and evaluate their social media performance. Liking posts on Facebook, tweeting on Twitter, and viewing pins on Pinterest are all examples of social media engagement.

EMBEDDING

Embedding is the process of putting social media content on a web page. When you see a YouTube video on a blog you're reading, or a tweet posted on a business' website you're checking out, that's an example of embedding. Embedding is done through HTML code, and most social media sites have an “Embed” option that gives you the exact code you'll need.

MICROBLOGGING

Microblogs are a subset of traditional blogs where instead of longform content, short messages consisting of a few sentences, an image, a video, or a link are posted and shared. Twitter, Google+, Tumblr, and Facebook are all considered microblogging platforms.

USER-GENERATED CONTENT (UGC)

User generated is social media content (posts, photos, videos) created by users about a brand or product and not by companies or organizations themselves. When a local restaurant retweets a Twitter user's positive shout out, or Coca-Cola reposts a picture of an Instagram user drinking a Coke, that's UGC.

AFFILIATE MARKETING

Affiliate marketing is a strategy where businesses reward individual affiliates (people or organizations outside the business) for bringing in new customers or visitors through ads or content on the affiliate's website. Affiliates receive payments or product discounts based on the number of customers they generate. These are exceptionally common on personal or lifestyle sites, where you might notice that the product recommended has a link with a bunch of additional stuff tracked on. That means that if you buy the product, the blog or site that lead you there will make some percentage of that sale.

BOUNCE RATE

Bounce rate is the percentage of visitors to a website who leave the website quickly without really looking at it—Google analytics calculates bounce rates based on website sessions where a visitor only sticks round to look at one page before bouncing. Sites aim to keep this number low—they want you spend time on their site—and so they'll try to keep content as engaging and relevant to you as possible.

CALL TO ACTION (CTA)

A call to action is the text, banner, form, or image on a web page (or email) asking a visitor to literally take an action—read more content, join an email list, sign up for a webinar, buy a product, etc. CTAs are a marketing tool that converts web users into leads for businesses.

CONVERSION RATE OPTIMIZATION (CRO)

CRO is a marketing system for raising the percentage of website visitors who convert to paying customers. CRO methods usually involve encouraging users to take specific actions on the website, such as filling out a web form, signing up for a trial, or joining an email list.

MARKETING AUTOMATION

Marketing automation describes the use of software or online services (like HubSpot, MailChimp, and Act-on) to automate repetitive marketing tasks like emails, customer relationship management, social media posts, and analytics. Marketing Automation programs allow marketers to input specific criteria for the tasks in question and that data is interpreted and executed by the program.

SEARCH ENGINE MARKETING (SEM)

SEM describes the use of paid advertising (such as brief copy, product listings, and video clips) on search engines (Google, Yahoo, Bing) in order to drive user traffic to your website.

SEARCH ENGINE OPTIMIZATION (SEO)

SEO is the internet marketing practice of optimizing a website so that it's more likely to show up in unpaid search results (e.g. it's one of the first sites to appear when you Google a related topic). SEO is done through using algorithms based on specific search engine's behaviors, analyzing the specific keywords typed into search engines, and researching which search engines are popular with particular demographics. Then, you align the format of your content (including things like making sure headings have extra searchable terms) to give yourself the best shot at moving up in

search engines' rankings. Be careful, though: going too far has consequences. “Stuffing” your content with keywords will get you dinged on Google's rankings, so don't let the goal of SEO overtake producing authentic, excellent content.

TRAFFIC

Traffic is the total amount of users who visit a website. Overall traffic is then broken down into specific types of visits—like unique visitors and total clicks.

GROWTH HACKING

Growth hacking is the creative use of technology (websites, marketing emails, apps) and analytics (data mining, A/B testing) in combination with product development to increase a company's growth. Growth hacking focuses on lower cost marketing alternatives to traditional television, newspaper, and radio ads and is often used by startup companies looking to grow their business rapidly during their launch phase.

A/B TESTING

A/B testing is the practice of comparing two versions of online content—websites, apps, marketing emails, etc.—in order to see which version performs better. The two versions (A and B) are presented to users at random in order to gauge reactions.

DATA MINING

Data mining is the practice of examining large amounts of data in user databases and websites to find consumer patterns, behaviors, and relationships that can be useful in marketing goods and services online.

EMAIL MARKETING

Email marketing is the use of direct emails (directly from a business to an individual) in order to communicate with current and potential customers. Email marketing allows companies to strike a more personal tone and establish a voice for their brand.

WEBSITE OPTIMIZATION

Site optimization is the process of using growth hacks to improve the site's ability to convert visitors to customers. Controlled experiments like A/B testing are carried out and the results are used to make website changes that lead to more pageviews, product purchases, etc. This might include making it easier to get from one article to another, making sure pop ups most accurately match the interest of the user, or simply making the site as a whole easier to navigate.

GRID SYSTEM

Grids are a set of columns and rows that can be used as guidelines to

arrange content on a web page. Grid systems help provide a solid base of uniformity and consistency in your design, making it more legible for the viewer.

RASTER IMAGES

Raster images are computer graphics made of pixels that can be edited pixel-by-pixel with programs like Painter and Photoshop. Raster image are stored in familiar image file types like GIFs, JPEGs, and PNGs.

RETINA DISPLAY

Retina display is a term trademarked by Apple for an electronic device display with density so high (usually over 300 ppi) that people can't see the individual pixels. Apple uses these high density displays in Apple Watches, iPhones, iPads, MacBook's, and iMac

MOOD BOARD

Mood boards are collections of content (images, materials, pieces of text) used to represent the visual style of a website—or any creative project— (color palette, images, icons, and fonts) in pre-production. The style represented on a mood board is then translated into digital form by visual designers.

SITEMAPS

Sitemaps are outlines or maps of the pages that make up a website. They show the relationship between the pages and links, apps, videos, or other components, and can take the form of a document or its own page on the website.

USER INTERFACE (UI)

User interface includes all the parts of a website, app, computer, smartphone, etc. that the user can manipulate and interact with. Display and touch screens, website menus, keyboards, your cursor—these are all part of a user interface.

USER EXPERIENCE (UX)

UX describes the emotions, attitudes, and ease-of-use a person has when using a product or service. UX Design is the practice of using design to improve communication between a product and its user in order to enhance the user's overall experience.

USER FLOW

User flow is the path typical users take when starting on a website and moving toward an action on the site. Creating a smooth path that is intuitive for users to follow is part of user experience (UX) design.

USER PERSONA

Personas are theoretical user profiles created by UX and web designers to define what kind of user a website is being built for and what their needs are. User personas are created using demographic information, user research, and analysis of customer experience metrics.

USER RESEARCH

User research is the process of investigating how users behave on a website and examining how that behavior can lead to a better website experience and design.

WIREFRAME

Wireframes are sketches of the key information that goes on each page of a website, essentially showing the site or page's "skeleton." Designers can then use this sketch as a starting point for laying out a website. These can be made in programs or written on a napkin—we've seen it all.

FONT

Fonts or typefaces are what determine the look of your text—they are typically designed by people who specialize in type design. Fonts are organized by style family's (Arial) and then grouped by weight with in that family (regular, italics, or bold).

KERNING

Kerning refers to the space between characters (letters, numbers, and punctuation) and the process of adjusting that space to avoid unsightly gaps and improve the legibility of text.

LEADING (PRONOUNCED "LED-ING")

Leading is the vertical distance between lines of text on a website—in other words the space between lines, a subtle (but important!) part of design appearance.

TRACKING

Tracking is the amount of space between words (as opposed to individual characters), and like kerning and leading, is essential for legibility.

TYPE HIERARCHY

Hierarchy is a method of using different font sizes and styles on a website in order to organize the site and make it more visually appealing. A web page with titles in a larger font than its body text or bold text separating sections is using type hierarchy (like this very article!).

SERIF

Serifs are small lines attached to the end of letters or symbols in

"serif" font family (Times New Roman, Lucida Bright), distinguishing those fonts from "sans serif" font families (fonts without serifs, like Arial, Helvetica).

FRONT END

Front end describes all the parts of a website that can be seen and interacted with by users. Front end web development usually involves coding with HTML, CSS, and JavaScript.

HTML (HYPERTEXT MARKUP LANGUAGE)

HTML is the standard language used to create web pages. It's the most basic building block you'll need for developing websites. You might remember basic HTML tags from early personal websites like Myspace, where you could customize your page with commands inside <>.

HTML5

HTML5 is (as of this writing) the latest version of HTML. HTML5 focuses on features that can be used on low-powered devices (making it ideal for creating mobile applications), the native ability to work with multimedia and graphic content, and new semantic web tag elements (features you use to structure your pages and documents).

ELEMENTS

Elements are individual HTML components of a document or webpage. For example, a paragraph in an HTML document is an element. Elements are made up of an opening tag ( ), a closing tag ( ), and information between them: This is my paragraph!

META ELEMENTS

Meta elements are HTML elements that don't appear visibly for the user on a webpage, but give the web browsers additional information about the page—keywords, author of the document, last modified, etc.

SEMANTIC ELEMENTS

Semantic elements are HTML elements that provide information to the web browser processing the page as well as the developer building it. While non-semantic elements like and don't describe their content, semantic elements like <header>, <section>, and <article> define their content in their name.

STRUCTURAL ELEMENTS

Structural elements are the HTML elements used to organize the content of a web page. Structural elements like and are used to group block level and inline content together, respectively,

while <header> contains the header content of a page, <footer> contains the footer content, etc.

ATTRIBUTES

Attributes are used to provide additional information about HTML elements. For example, an HTML element like a paragraph can have an attribute of being aligned (left, center, or right). Attributes are included in the opening tag and made up of the attribute name, an equal sign, and a value in double quotes. Example: <p = align=”right”>This is my paragraph!

OPENING TAG AND CLOSING TAGS

Opening and closing tags are sets of angle brackets with an HTML element character(s) that contains a piece of content or part of the structure for a web page

Example of opening tag:

Example of closing tag:

SELF-CLOSING TAG

Self-closing tags are opening tags that don't have a corresponding closing tag but instead close themselves with a forward slash before the right angle bracket. If you look at this tag to insert an image, you'll see that it has the / which typically denotes closing a tag inside the opening tag.

Example:

CSS (CASCADING STYLE SHEETS)

CSS is the language used to add style to documents created with HTML. Where HTML comes first and creates the foundation for a page, CSS comes along next and is used to create the page's layout, color, fonts, etc.

CSS3

CSS3 is the latest version of CSS, introducing features like rounded corners, shadows, gradients, transitions or animations, and new layouts like multi-columns and flexible box or grid layouts.

SELECTOR

Selector is a part of CSS code that defines which HTML element the CSS styling effects. For example, if element “p” (say, a specific paragraph) is a selector, then:

<p style="font-size: 12px">

Will change the font size of the selected element.

PROPERTY

A property in CSS is the part of a web page's foundational HTML code (font size, color, margin) whose appearance or style is changed by CSS.

VALUE

A value is the CSS code that defines the settings for for a CSS property. For example, if you're using CSS to change the font size and color of a certain block of text, the value describes what those changes will be. The value 1.5em, red, 20px will cause the property (the block of text) to have an indentation of 1.5 the font size, the text will appear red, and the font size will be 20pt.

DECLARATIONS

Declarations are parts of CSS code where a property and value for the selector are displayed inside a pair of curly brackets.
{Font-size: 1.5em;}

BACK END

Back end refers to the "under the hood" part of a website or web service that makes it run (this includes applications, web servers, and databases), and is typically not visible to the user interacting with the site or service.

APPLICATION

Applications are types of software (also called "apps" and often used to refer to mobile device software) designed to provide a function for a user or another app. Apps include everything from web browsers, to word processors, to photo and image editing tools, to chat programs like Skype and Google Hangouts.

API (APPLICATION PROGRAMMING INTERFACE)

An API is the interface used for building web applications. APIs provide building blocks for coders to use, and then the coders put those blocks together to create the program they are trying to build. Examples of APIs include Google Maps API (allows developers to embed Google maps on web pages), Twitter APIs (Twitter has two APIs—REST, which allows developers to access core Twitter data, and Search, which allows developers to interact with Twitter Search and trends data), and Amazon Product Advertising API (allows developers to access Amazon's product database and advertise Amazon products on a website).

BUGS

Bugs are coding mistakes or unwanted pieces of code that keep a website or program from working properly.

DEVOPS (DEVELOPMENT OPERATIONS)

Devops is a software development process that focuses on helping development, operations, and quality teams understand each other and collaborate better. By unifying these three separate departments, Devops teams aim for shorter development cycles and more dependable software releases.

OBJECT-ORIENTED PROGRAMMING (OOP)

Object-oriented programming is a type of computer

programming/software design that focuses on the creation of objects that have specific and unique attributes and abilities. In OOP, computer programs are made up of these created objects that then interact with one another. This is in contrast to earlier programming languages that focus more on the process of turning input data into output data rather than the data (objects) itself. Examples of OOP languages include Ruby, PHP, and Python.

SOFTWARE

Software is a program or set of instructions that tells a computer, phone, or tablet what to do. Software includes individual applications (web browsers, word processors) as well as system software like operating systems (Microsoft Windows), drivers (software that allows operating systems to communicate with hardware like printers), and utilities (tools like anti-virus programs or hard drive defragmenters).

TEXT EDITOR

A text editor is a type of software used to write plain text (without formatting), which is often used for coding and programming. After code has been written, it's formatted another program called a compiler (specific to the programming language you're using) to make it computer-readable, but code normally starts its life on a plain text editor. Examples of text editors include SublimeText, TextEdit, TextWrangler, and Notepad++.

VERSION CONTROL

Version control is a tool used to keep track of changes to code and files on a website or app and allows the user to go back and restore earlier versions in case of bugs. Version control tools like Git are often built in to source code editors (programs used to write and edit code) like Visual Code Studio, or offered as part of a web hosting service.

WEB SERVERS

Web servers are computers used to store websites, online apps, documents, pictures, or other data, and can be accessed through the internet by way of applications like web browsers or file transfer protocol (FTP) clients. When you visit a website with the browser on your computer or smartphone, you are requesting it from a web server.

CLOUD COMPUTING

Cloud computing is a practice where data is not stored locally on your own computer, but instead is spread out among a number of remote servers accessible through the internet. Service like Google Docs, Facebook, and Gmail are examples of cloud computing—you are interacting with data on your home computer that is stored externally in "the cloud."

FIREWALLS

Firewalls are systems designed to protect and secure a computer network—everything from a commercial web service to your home WiFi network—from external security risks. Firewalls monitor inbound and outbound network traffic and determine whether or not to allow the traffic through based on a user-defined set of security standards.

ROUTERS

Routers are the devices used to connect personal computers to the internet via a service provider like cable or DSL. The device that your computer is either directly connected to via an ethernet cable or that you use to access your home WiFi network is a router.

UPTIME & DOWNTIME

Uptime and downtime describes how long a website, computer, or other system has been working (uptime) or not working (downtime).

VIRTUAL MACHINE (VM)

Virtual machine is software that makes it possible to use one computer operating system (like Windows 10) on a computer running another system (like a MacBook Pro). Examples include Virtual Box, Parallels, and VM Ware.

VPN (VIRTUAL PRIVATE NETWORK)

VPNs are networks that allow public internet connections to be used as private networks as a means of improving security. When you use a public WiFi network, for instance, your device and data are theoretically accessible by everyone else on the network. When using a VPN, you're still able to access the internet through the public network, but are shielded by the VPN. VPN's can be set up through some web browsers (like Opera), or can be accessed through paid monthly services.

BIG DATA

Big data is a term for collections of data that are so large they can't be processed through traditional data processing systems. These collections come from sources like mobile devices, emails, search keywords, user database information, applications, and servers. By finding ways to comb through this data, companies can identify consumer patterns and use them to predict and optimize their business.

DATA ARCHITECTURE

How data is collected, stored, accessed, and used in companies and organizations.

DATABASE

Data architecture describes the way data is collected, stored, accessed, and used in companies and organizations. It can be seen as the roadmap for how data flows across an organization's IT systems and applications.

DATA MODELING

Determining what kind of data is needed and how it will be structured and organized.

DATA VISUALIZATION

Data visualization is the use of graphs, charts, tables, infographics, etc. in order to define and communicate data being analyzed and the findings that have come from it.

RELATIONAL DATABASE MANAGEMENT SYSTEM (RDMS)

Relational database management systems are used to organize data into tables—the data can then be accessed or reassembled without having to reorganize the database tables. Examples of RDMS include SAP and MySQL.

HYBRID APP

Hybrid apps are applications that will work on different platforms (computers, mobile devices, tablets) and are a combination of a

native app (one that is stored locally on your device) and a web app (one that is accessed through a web browser on the Internet). Amazon and Apple App Stores, Twitter, Yelp, and Gmail are all examples of hybrid apps.

IDE (INTEGRATED DEVELOPMENT ENVIRONMENT)

IDE is a software application that includes tools like source code editors (text editors specifically designed for writing code), debuggers (tools for testing code), and build automation tools (tools for compiling code into machine-readable format and running automated tests). Examples of IDE's include Eclipse, Visual Studio, and VIM.

NATIVE APPS

Native apps are made specifically for certain platforms. They only run on the platforms they were built for, and are stored locally on those devices. Mail for iOS and Ingress for Android are both examples of native apps.

NFC (NEAR FIELD COMMUNICATION)

NFC is technology that lets mobile devices communicate using radio waves when they're very close to each other (about four inches or less) and is used for services like sharing files, pairing accessories, or wireless payments. Companies can use NFC to make products

interactive with consumers' mobile devices, such as including NFC-enabled tags on products that allow users to register products, get discounts, or place new orders with their mobile device.

RESPONSIVE WEB DESIGN

Responsive web design is the practice of designing websites so that they adapt gracefully to different-sized devices like phones, tablets, wearable devices, etc. If you're able to visit a website on your phone and it looks just as proportional and seamless as it does on your computer, it's an example of responsive web design.

SDK (SOFTWARE DEVELOPMENT KIT)

SDK is a set of tools for creating specific types of software. SDK's are released by companies that control the platform the software is being developed for. For instance, apps developed for iOS require the iOS SDK, Windows apps require the .NET Framework SDK, and Java apps require the Java Development Kit.

WEB APPS

Web apps are websites that look and feel like an app (as opposed to a series of linked pages). Facebook, Pandora, and Google Docs are all examples of web apps.

Adobe Acrobat Reader

Acrobat Reader is software that allows you to view a PDF document (a document that can be seen but not changed). It can be downloaded free of charge from Adobe.

ADSL

Asymmetric digital subscriber line (ADSL) is a type of digital subscriber line (DSL) broadband technology that is used to connect to the Internet. It uses standard telephone lines to deliver high-speed data communications (up to 24 megabytes per second).

ANALOGUE

Analogue is a conventional method of transmitting data. Standard landline telephones use analogue technology. It is distinct from digital technology, which provides for greater quality and speed of data transmission.

ASSISTIVE TECHNOLOGY

Assistive technology refers to any software or hardware that acts to assist and improve the functional capabilities of people with disabilities. Examples include wheelchairs, prosthetics, voice-to-text technology and text-to-speech technology.

ATTACHMENT

An attachment is a document sent with an email message. Many types of files can be sent this way (e.g. Word documents, PDFs, Excel files, JPEGs). Be wary of attaching large files because these can take a lot of time for the recipient to download. If you have a large file, it is considered good practice to compress the file using software such as WinZip before attaching it.

BACKWARD COMPATIBLE

If software is backward compatible, it is compatible with earlier (superseded) versions of the same software. For example, the Microsoft word-processing program Word 2010 can read files created in the 2003 version of the same program, so it is backward compatible.

BIT

A bit (short for binary digit) is the smallest unit of measurement in computing. 8 bits make up 1 byte.

BLUTOOTH

Bluetooth is a wireless communications technology intended to replace cables. It allows short-range connections between two or more Bluetooth-compatible devices such as mobile phones, tablets, headsets or medical equipment.

BOOKMARK

A bookmark is a saved link to a particular Web page. Microsoft Internet Explorer denotes bookmarks as "favorites."

BOOLEN OPERATOR

Most search engines (e.g. Google) allow you to limit your search or make it more specific by using words such as "and", "or" and "not". These words are known as Boolean operators because of their origin as terms in logic.

BOOT (re-boot)

To boot (or re-boot) is to load and initialize the operating system on a computer. Think of it as starting up your computer. In Windows you can use the key combination CTRL and ALT and DEL as a "soft" boot. This means restarting the computer rather than turning it completely off and on again, which could cause damage to your computer's hard disk under some circumstances.

BOUNCE BACK

An email message that cannot be delivered and returns an error notification to the sender is said to "bounce back". If you receive such an error notification, check that you have typed the address correctly.

BROADBAND

Broadband is a type of communications technology whereby a single wire can carry more than one type of signal at once; for example, audio and video. Cable TV is one technology that uses broadband data transmission.

BROWSER

A software program that allows you to surf the web. Popular web browsers include Google Chrome, Mozilla Firefox, Microsoft Edge and Internet Explorer.

CATCHE

When you download (read) a web page, the data is "cached," meaning it is temporarily stored on your computer. The next time you want that page, instead of requesting the file from the web server, your web browser just accesses it from the cache, so the page loads quickly. The downside to this is that if the cached web page is often updated, you may miss the latest version. If you suspect that the web page you're seeing is not the latest version, use the "refresh" button on your browser.

CAD

Computer-aided design (CAD) is a type of software that allows users to create 2D and 3D design and modelling. CAD is used by

architects, engineers, artists and other professionals to create precise technical drawings.

Chip

A chip is a microprocessor that performs many functions and calculations that make your computer run. Your computer's chip is also referred to as the CPU (Central Processing Unit) or the processor.

Compression

Compression is the reduction of the size of a file. Compressed files take up less memory and can be downloaded or sent over the Internet more quickly.

Cookie

A piece of code or data created by a web server and stored on a user's computer. It is used to keep track of the user's usage patterns and preferences.

CPU

The central processing unit (CPU) is the brains behind your computer. The CPU is responsible for performing calculations and tasks that make programs work. The higher the speed of a CPU, the faster the CPU undertakes the calculations and tasks.

Cybercrime

Cybercrime is any type of illegal activity that is undertaken (or relies heavily) on a computer. There are thousands of types of cybercrime, including network intrusions, identity theft and the spreading of computer viruses.

Cybersecurity

Cybersecurity refers to measures designed to protect your computer, device or network from cybercrime. This involves preventing unintended and unauthorized access, change and damage.

Device driver

A device driver is a small program that allows a peripheral device such as a printer or scanner to connect to your PC.

Domain

A domain is a set of computers on a network that are managed as a unit.

Download

Downloading is the method by which users access and save or "pull down" software or other files to their own computers from a remote computer via the Internet.

DV

DV stands for digital video.

Email

Email or electronic mail is a way of sending messages over the internet. Popular email programs include Outlook, Mozilla Thunderbird, Gmail and Yahoo Mail.

Encryption

Encryption is the process of converting electronic data to an unrecognizable or encrypted form, one that cannot be easily understood by unauthorized parties.

Ethernet

Ethernet is the most common way of connecting computers on a network with a wired connection. It is a type of local area network (LAN) technology, providing a simple interface for connecting multiple devices.

FTP

File transfer protocol (FTP) is a common method of transferring files via the internet from one host to another host.

Gateway

A point within a network that interconnects with other networks.

GIF

Graphics interchange format (GIF) is a graphics file format. Because GIF files are compressed, they can be quickly and easily transmitted over a network. GIF is one of the main graphics formats on the Internet.

HARD DISK

The physical place where a computer stores information - applications and files - is known as its hard disk drive (HDD). The bigger the HDD, the more data it can store.

HOME PAGE

The page that an Internet browser first opens up to. It is usually the starting point of an organization's or individual's website.

INTERNET

A set of interconnected networks that allow computers in different locations to exchange information. The Internet includes services such as the World Wide Web, electronic mail, file transfer protocol (FTP), chat and remote access to networks and computers.

ISP

An internet service provider (ISP) is a company that provides access to the Internet. In Australia, widely used ISPs include Bigpond, iinet and Dodo.

INTRANET

An intranet is basically a private, internal internet specific to an organization or group.

JAVA

Java is a programming language that is commonly used in the development of client-server web applications.

JPEG

JPEG stands for Joint Photographic Experts Group, which was the committee that created the file format known as JPEG. The format is commonly used for photos displayed on the World Wide Web.

LAN

A local area network (LAN) is a system that connects computers and other devices that share a common communications line and wireless link, generally within a limited geographical area such as a home or office building.

MALWARE

"Malware" is short for malicious software. It refers to a software program that has been developed to do harm to other computers. Types of malware include viruses, worms and spyware.

MEGABYTE

A measure of computer processor storage and real and virtual memory. A megabyte (Mb) is 2 to the 20th power bytes, or 1,048,576 bytes in decimal notation.

MEGAHERTZ

Megahertz is the unit used to measure the speed of a computer's processor (e.g. 2.8Ghz)

MODEM

A modem is a device that allows computers to transmit information to each other via ordinary telephone lines.

ONLINE

If a computer (or computer user) is online, it is currently connected to a network or to the Internet. Online also refers to resources and services available on the Internet - e.g. online banking, online dictionary.

OPERATING SYSTEM

An operating system (OS) is the software that manages all of a computer's processes and allows programs and applications to run. The most prominent operating system is Microsoft Windows. Others include Mac OS X and Linux.

PDF

Portable document format (PDF) is a file type created by Adobe Systems Inc. PDFs can be read using free software called Adobe Acrobat Reader or another PDF reader.

PHISHING

Phishing is a type of email fraud in which the perpetrator sends out emails that appear to come from a legitimate service or reputable company, such as a bank or an email service provider. These emails aim to lure recipients to reveal confidential information that the perpetrator can use for their financial advantage - for example, online banking log-in details and passwords.

PLUG-IN

A software plug-in is a component that adds to a software program's functionality.

POP

A Post office protocol (POP) is an Internet protocol used by your Internet service provider (ISP) to handle email. A POP account is an email account.

PPM

Pages per minute (PPM) generally refers to the speed of a printer.

PROCESSOR

The processor is the brains of your computer. It is responsible for performing calculations and tasks that make programs work. The faster the processor, the faster the computer works.

PROTOCOL

A protocol is a standard or set of rules that computers and other devices use when communicating with one another.

RAM

Random access memory (RAM) is usually referred to as a computer's "memory" - it stores information used by programs. Generally, the larger your computer's RAM, the more programs it can run at once without slowing down.

READ-ONLY

A read-only file cannot be edited, modified or deleted.

RESOLUTION

Resolution refers to the number of distinct pixels that make up the display on a computer monitor. It is denoted in DPI (dots per inch). The higher the resolution, the finer and smoother the images appear when displayed at a given size.

ROM

ROM stands for read-only memory. It is the part of a computer's memory that cannot be changed by a user. The contents of ROM remain even when the computer is turned off.

SAAS

SAAS stands for software as a service. It is a software distribution model whereby software applications are centrally hosted and licensed on a subscription basis.

SEARCH ENGINE

A search engine enables a computer user to search information on the Internet. It is a type of software that creates indexes of databases or Internet sites based on the titles of files, keywords, or the full text of files. The most popular search engines are Google.com.au, Yahoo.com.au and Bing.com.au.

SSL

SSL, or secure sockets layer, is a protocol that allows Internet users to send encrypted messages across the Internet. It is generally used when transmitting confidential information (e.g. personal data or credit card details). A web address that begins with "https" indicates that an SSL connection is in use.

SERVER

A server is a computer that handles requests for data, email, file transfers, and other network services from other computers.

SPAM

Spam refers to unsolicited email messages sent for marketing purposes.

UNZIP

To unzip a zip file is to extract and decompress compressed files from it. If you are sent a zip file via email, you will need to unzip it before you can access the files inside it.

URL

A URL (unique resource locator) or web address is the string of characters you type into a browser to access a particular website or other resource on the Internet.
(e.g.http://www.ourcommunity.com.au)

VIRAL

If an online video, photo or article "goes viral", it experiences a sudden spike in popularity in a short period of time.

VIRUS

A virus is a piece of programming code inserted into other programming to cause damage. Viruses can be sent in many forms but are often transmitted via email messages that, when opened, may erase data or cause damage to your hard disk. Some viruses are able to enter your email system and send themselves to other people in your list of contacts.

WEP

Wired equivalent privacy (WEP) is a security protocol used in wi-fi networks. It is designed to provide a wireless local area network (LAN) with a level of security similar to that of a regular wired LAN. WEP-secured networks are usually protected by passwords. (See also WAP.)

WI-FI

Wi-Fi is a technology that allows computers and other devices to communicate via a wireless signal. Essentially, it means you can browse the internet without tripping over phone cords.

WPA

Wi-Fi protected access (WPA) is a security protocol used in wi-fi networks. It is an improvement on WEP because it offers greater protection through more sophisticated data encryption.

ZIP

To zip files is to archive and compress them into one file of smaller size using a program such as WinZip. It's a handy way to make files smaller before sending them via email.

Chapter 9

Challenges and Problem of Technology in Nigeria

Nigeria is greatly blessed with a lot of talented people with great potentials but sometimes these people get discouraged to showcase their talents because of some of challenges. In the aspect of technology, Nigeria has really been trying in the past few years. There has been some improvement in technology but we still need to improve more because we are lagging behind in some aspects.

According to the recent Gross Domestic Product (GDP). Report by the National Bureau of statistics, the information and communication technology (ICT) sector contributed 18.44% to Nigeria GDP in the second quarter of 2022. The sector saw a 6. 55% growth rate from Q1 2022 (By Damilare Dosunmu Sep 01 2022)

Even as Technology is fast taking over a lot of things in the country and things are beginning to get easier, there are still some problems

and challenges of Tech in the country and we have to figure out those challenges or problems in order to solve them. Even though tech starters are coming up in the country, we need to help them with how to be successful in the field.

Some of the Problems and Challenges of Technology in Nigeria are:

1. Discouragement; I remember having a conversation with someone, who left tech, after asking him why he did so, his answer was that people discouraged him that tech is not profitable and he will only suffer and get nothing out of it. Well you see this person got the wrong information and he decided to stop. Yes, definitely we all know that people sometimes will discourage you and give you the wrong advice on certain things. Building technology or going into tech is not an easy thing, you will have to motivate yourself. One of the problems of technology I discovered recently in Nigeria is that people are afraid of going into tech because of discouragement from people, thinking that if they share their tech ideas to people they might laugh at them or call them crazy. These discouragements sometimes come from family members, friends and the society where they live in. I think this problem will be solved if people learn to encourage and support those people going into, or in the tech.

2. Lack of Mentorship; A mentor is someone who guides, teaches

and advices a person on certain areas of a career, life and education based on his/her experience and area of expertise. One of the problems of technology in Nigeria is lack of mentorship, people in tech lack enough mentorship. Even though we have some individuals, organizations and tech startups centers that are really doing well in the aspect of mentorship for tech starters. But Nigeria needs to improve in these aspects. In fact, some of the mentors need mentorship and training too. If the government, individuals and organizations will consider these aspects of mentorship in tech for tech starters and people in tech to see that they are being mentored and trained well, a lot of people will want to start going into tech because they know there are people to help them out. Mentorship is very good because the mentor is already an experienced person and therefore, he will use his experience to guide and help the tech starters on 3Ws and H -- what they know, what they should do, what to avoid and how to do the tech in the right way.

3. Limited Tech Training Hubs/Centers; When it comes to Technology, a lot of people think it is all about going to a cyber cafe centers to get training on computer based applications and software. Well, there is more to Technology. Nigeria needs enough tech training hubs where students and people interested in tech can get to share ideas, learn, connect, train and create something not only in computer based software and applications but to learn how to build

tech products. There are a lot of emerging technology that people can get to know and learn about them, such as the artificial intelligence, virtual reality, block chain technology, etc. The science and technical colleges in the country are some of the schools that have greatly helped students to learn about how to build technological products and that have greatly improved tech in the country. But what of those people that didn't attend those colleges but are interested in building Technology and never got the opportunity to learn or connect with people in the tech? These tech hubs will help them bring their talents and ideas to reality.

4. Lack of Funds; Money is one of the things that makes a business to function properly because without capital any business cannot be established properly. In Technology, funding is required for people that are into tech, or starting technology. Some of the equipment and tools use in building some technologies are very costly especially for those into building drones, solar panels, engines and the rest. Some of the materials needed in building are sometimes gotten outside the country, so, people who don't have enough money especially for some tech starters cannot get these materials to build what they want to do and this has really limited them in some areas. Some people that are already into the Technology needs funding to establish their business, buy all the necessary techniques they need to sponsor their training. Most people sometimes get discouraged to

go into tech because they don't have the money to start and they don't know how to get funding. One of the major challenges most people face while going into tech is lack of funding. If the government would look into this and provide funding for people in technology, it would greatly help the aspect of technology in the country.

5. Electricity Supply Challenges; Nigeria has this challenge of electricity supply and this has really affected the technological aspect in the country. In technology, power supply is very much needed and one of the problems in Nigeria is the electricity supply problem. Even though, recently, the electricity sector is improving in some areas in the country which is yet to be sufficient. Some Technological appliances and tools need electricity to operate but because of the electrical instability in the country, people have now started developing technologies that use solar energy which is a very welcome development. Still, the electricity supply should be improved in the country because some Technologies need electricity to function and power supply is needed for some Technologies to be operated. Some areas don't have access to constant electricity supply and this has affected their tech business making them to use generators because some of them cannot afford to purchase the solar panels used in generating solar energy and this has reduced the tech activities in the country. If the government and the people in the

power sector could make constant electricity to all areas in the country, then Technological activities will definitely be improved.

6. Lack of Expertise and Skills in Some Field of Technology; Another problem is lack of expertise in some Technological fields. We have people in the tech sector, but not all of them are actually experts in the field. Some are just managing to make money out of what they can do. This has affected the tech areas in the country. Nigeria needs experts and experienced individuals in different fields of tech that will teach and mentor others. There are new emerging technologies that Nigeria needs to have enough people in that field who are experts, such fields include; building robotics, AI, Block chain technology etc.

Skills are very important in technology, both hard and soft skills. And in this area, we need people that have tech skills in order to improve the tech sector of the country. More than 50 percent of Nigerians, over 200 million do not have digital skills and therefore cannot use data services. According to the 2021 world bank development report" Godsgift Oonyendinefu (May 19, 2022).

7. Access to Tech Materials; A lot of people have lost interest in technology because they don't have access to the materials needed for them to build the tech product. For some, it has prolonged and limited their work. There are a lot of technologies that need

materials to build especially when it comes to building or creating a physical tech product rather than a computer-based product. Some of the materials needed are not found in the country and people have to order from abroad as it sometimes takes months for delivery which have caused setbacks in some works. Some materials are found in the country but some are costly and some people cannot afford them that is why most tech end up building the prototype which is very good but in Nigeria, I think to need to go beyond prototypes to start building something that can be used to benefit the country. Most works of tech have stopped in just the prototype stage because of lack of funds, materials, or even no one to help those people with the prototype to build bigger products of their prototype that can actually be put in use.

8. Education; Nigeria is still improving in the educational sector, where we now have lecturers and teachers who are greatly doing their best to give the students the best and right training. But sometimes, the technology in schools and colleges were not been given enough attention. Most people are only taught the theoretical aspect of the tech while some with little or no knowledge of the practical aspect of the tech. That is why most students after coming out of schools tend to engage themselves by going for tech or computer-based training because they have not been taught properly in schools concerning the practical aspect and sometimes this is caused by the lack of

availability of the materials and equipment to use in some schools, that's for teachers to actually show those students how to do it and allow them to put what they have learnt into practice. Sometimes, only a sample is available for the teacher to show the students but no practical aspect. Nigeria needs more qualified, competent teachers and lecturers in the science and technology field to help give the right training to students in technology.

If there is one thing that building a Technology needs is the practical aspect, because it makes someone actually learns it faster and understands it better. If the government or the ministry responsible in the part of Education will look into this and improve the way students are being taught Technology in Schools, colleges and universities.

9. Lack of Focus on a Particular Field of Tech; I think people tend to engage themselves in different aspect of technology rather than focusing and mastering just one at a time. This is one of the problem of technology in Nigeria. You will see an individual getting involved in different fields of technology and sometimes at the end of the day he/she can't even be a master of one because they have divided his attention to different things. Yes, it is good to know everything you want to learn about Technology but don't combine them all at once. Learning is like growth, you start from the simpler to the complex ones. People should learn to go for one at a time after.

Technology is not something you learn it in days or weeks. People have to understand that you will need enough time to master a particular tech for you to be expert in that field. It's not all about learning every Technology, you first have to find out which one you want to go for, which one you are best at and the one you have passion for, because if people don't figure these out you will realize that after getting on with the tech, they keep on changing fields without even learning and sticking to a particular one. Tech experts and companies should help to solve this problem by organizing workshops and orientation especially for tech starters to lecture the students on how they can choose the tech field that best suits them and how they can succeed in that area by avoiding multi-tasking themselves.

Amy Morin LCSW (2021) "Multi-tasking seems like a great way to get a lot done at once, but research has shown that our brain are not nearly as good at handling multiple task as we like to think they are. Infact research suggests that multitasking can actually hamper your productivity by reducing your comprehension, attention and overall performance.

10. Poverty; Stephen Onyeiwu, Allegheny College (2021) The Nigerian national bureau of statistics said in 2020 that 40% or 83 million Nigerians live in poverty that the number of poor people will increase to 90 million or 45% of the population in 2022.

In the above data we have seen that Nigeria is still living in poverty and this is really affecting the growth of Technology in the county. People prefer to buy food because of the economic hardship in the country rather than investing it in technology. In fact, some children cannot go to schools because of poverty. Someone in technology was not able to finish his tech project and when asked why, he said he didn't have enough money to buy the materials needed. The government of Nigeria has to seriously look into the aspect of poverty in the country to eradicate it. Otherwise, it will be a stumbling block for Nigerians in Technology. Poverty have eaten up deeply into the country that people suffer. This means that the technological growth in the country is greatly reduced.

11. Lack of Tech Industries; Looking around Nigeria, there are no enough tech industries where technologies are built, there are only few tech industries. Most Technological products we use in Nigeria are imported and this has affected the tech development in the country. If Nigeria could build up tech startups and industries, then it will greatly improve the Technology in the country.

Chapter 10

How Can Technology Improve and Develop Nigeria?

Nigeria is one of the developing countries in the world. It is the giant of Africa. It is believed that Nigeria looks at the technologically developed countries to tap in. I believe that if Nigerians will see Technology as a tool for us to develop and improve in all aspect, then we will grow. These are some of the Technological ways that will help Nigeria to develop and improve:

1. Employment Opportunities; If Technology industries and startups are being established, people will be employed and the rate of unemployment will be reduced. Apart from that, with technology, people can acquire the skills to either be self-employed, work remotely or establish their businesses. These will open doors for more tech hubs to be established, and more people will be

employed. Looking round the country, you will see a lot of jobless graduates and those with the jobs receive little or average salaries. Technology is a very broad field and almost everything we do or use today is part of technology. If especially the youths will have access to proper Technological training and resources, then it will serve as a means of income for them.

2. Access to Good Medical Services; With technology, the medical services in Nigeria will improve. If we look around the world, we will see that medical technology is fast growing and a lot of countries now use Technology in their medical services to see that people lives are saved and taken care of. A lot of people today do not only depend on going to the hospital to see a doctor but with a lot of medical technologies such as telemedicine, wearable devices, use of testing strips, research on diseases and the cure around, they can use it to take care of their health. In the past patients' data used to be stored in books and files, but with technology today, data are stored in computer and can easily be accessed with no stress. Technology has helped with the cure and prevention of some certain illness such as chemotherapy in destroying cancer cells etc. In fact, the technologists and scientists are coming up with robotics that will perform some medical function in the future. So with all this, technology is very important in aspect of medical services.

3. Improvement in Agriculture; Thanks to Technology that today we use Technological tools and equipment in the country to make farming and other agricultural processes easier. But still we need more of technology in the Agricultural sector in the country and with that, the Agricultural sector will bloom. There are still a lot of people in Nigeria that still use the old tools and way of farming in the country. A lot of people are into Agriculture in the country whether for commercial purposes, small garden or land to cultivate some plants and crops for the family use. People have to eat every day and that is why a lot of people go into Agriculture to farm and sell to make money or for their families to consume. Looking around the country, we have more people into Agriculture and some don't use the modern tools in agriculture, they are still using the old way of doing the Agriculture which is resulting to poor yield, poor storage, crop and plant diseases and hard labor with no good results. And this is leading to food scarcity in the country.

Technology, when used in all areas of Agriculture in the country, will help improve the Agricultural processes. A lot of Agric technologies can use such as the drones to help spread water and farm chemicals instead of people using their hands, pest and diseases control, weather forecast, robotic harvesters.

4. Improvement in Security; In terms of security using technology has always been helpful. The use of technology in security has greatly

improved the safety of people all over the world. Apart from that with tech security in the internet world such as cyber security data and password protection, privacy policies and spam detection, people can now secure their info and data on the internet.

Nigeria has been facing a lot of security issues over the years and one thing that will improve the insecurity challenges in the country is technology. With technology, bandits' hideout can be located and the soldiers can attack the enemies and help protect themselves.

5. Improvement in Education; Technology in Education has been helpful many students around the country by learning easier and faster. Today, with the help of technology, we have online E-learning platforms that students learn whatever they want to learn without going to the classroom or lecture hall. Students connect on student's community, online, to learn, share and help each other. Apart from that, students are able to meet other students from around the world and get mentorship from experts.

As a result of technology in Education, a lot of students have really kept themselves busy at home learning during the COVID-19 pandemic since schools were closed in 2020. Some schools in the country adapted this and were able to teach their students online. Still, some schools in the country were not able to get such privileges.

Conclusively, with Edutech, a lot of university students now join

online classes and E-learning platforms during the 2022's eight-month ASUU strike to keep learning. Some of these online E-learning platforms are mostly from outside the country. If the government, universities, colleges and the polytechnics in the country will take the advantage of E- learning platforms, in the country, will really help the Educational sector.

Chapter 11

Top Five (5) Emerging Career in Tech in the World

EMERGING CAREERS IN TECH

Technology is the sum of all techniques, skills, methods, and processes involved in the production of goods and services for the achievement of specific goals. Technologies like artificial intelligence (AI), machine learning, data analytics, and cloud computing have grown rapidly over the years (even decades), however, within a few months they have become indispensable in today's society amid today's global health.

With such a driving force behind these technological adjustments, the demand for jobs and people with the skills and knowledge to meet the needs of the digitally transformed industries and sectors has grown exponentially. In fact, in 2018 it was reported that the

demand for AI skills has more than doubled since 2015, with the number of job postings increasing by 119 percent.

According to the National Association of Colleges and Employers, computer science is the STEM subject with the highest vacancy and acceptance rate. The number of computer science students increased by almost 50%, making the degrees one of the fastest growing in the world.

A degree in a related computer science subject can lead to a variety of paid and high-demand jobs. The best tech jobs pay more than the average salary of $34,750 and have forecast growth rates faster than the expected overall rate of 11% for the average job in the United States.

SOME POPULAR TECH ROLES INCLUDE:

Data scientist
Software developer
Information security analyst
Computer security analyst
Web developer
Computer research scientist
Non-Technical Roles in Tech

Technology companies are the best places to work today and are often featured on the list of the world's best places to work. Many

people whose professional backgrounds are non-technical would like to get into the world of technology right now. They learn to code or take courses in data science to gain technological skills. This enthusiasm does not last long as the daily demands of their main job quickly make them lose momentum.

To begin your career journey in technology, you do not need to learn how to code as there are positions in technology companies that do not require any experience or technical knowledge. Some of which include; product marketing, sales development, Human resource, Project management, Research analyst, Content management, Finance, Customer success, Brand specialist and Social media specialist.

TOP FIVE EMERGING CAREERS IN TECH:

Machine Learning Engineering
Robotic Engineering
Data Science
Cloud Engineering
UX Design
Machine Learning Engineering

This particular branch of artificial intelligence is ideal for those who are passionate about computers and aim for a career in an exciting and fast-paced industry. Machine learning engineers use big data to create complex algorithms to ultimately program a machine (like an

autonomous car or digital voice assistant) to perform tasks like a human being, economic forecasting, image recognition, and natural language processing. Research says that there will be 2.3 million artificial intelligence and machine learning jobs by 2022. Machine learning engineer earns the average of $140,007 per year.

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ROBOTICS ENGINEERING

As technology advances at a rapid pace, robotic engineers must constantly analyze, reevaluate, configure, test, and maintain the prototypes, robotic components, embedded software, and machines they create for the manufacturing, mining, and automotive services industries. Robotics engineering is a highly technical job that requires patience and rational thinking. In the years to come, we are likely to see several new and innovative ways that modern technologies support society and businesses, especially in healthcare. The job prospects for robotics engineers are positive. The Bureau of Labor Statistics expects 4% of employment growth between 2018 and 2028 for robotics engineers. This development is almost as fast as the average for all occupations. The average salary for a robotics engineer is $100,098 per year. Salaries can vary depending on the size of the company, level of education, and experience.

UX DESIGN

UX (User experience) designers take care of the "behind the scenes" design to ensure that software, websites, or applications meet the habits, motivations, behaviors, and needs of consumers. According to a report from Hired.com there was a 289% increase in UX interview requests in 2020 and CNN Money is forecasting demand for UX designers growing by 18% from 2015-2025. The average UX designer salary starts at $80,928 per year for entry-level jobs, $104,580 per year for intermediate level, and $113,368 per year for senior Positions.

DATA SCIENCE

Data science jobs are not as new as other tech jobs, however, they are continued to be the hidden gem in any company. As companies collect and use more data every day, the demand for skilled professionals has exploded with opportunities to work in virtually every sector and industry, from IT to entertainment, manufacturing, and healthcare.

The Labor Statistics Department predicts that job prospects for data scientists will increase 15 percent between 2019 and 2029. This growth rate is much faster than the average for all occupations which averages only four percent. The salary for a data scientist is $ 100,560 per year.

CLOUD ENGINEERING

In the past few months, cloud computing has become a must for anyone who works remotely. At the same time, companies are desperate to hire people with the skills and knowledge who can migrate processes, implement the necessary infrastructures, and perform cloud-related tasks.

They are often titled under different roles including solution architect, cloud developer, and sysops engineer. In some cases, roles and responsibilities vary, but the overall responsibility of a cloud engineer is to plan, monitor, and manage the cloud system of an organization such as Google Cloud, Microsoft 365, and Slack.

Cloud engineering is expected to be among the top ten most sought-after IT jobs in the near future. This is because there is currently a great need for cloud engineers, mainly because a significant number of companies are moving their business processes to the cloud.

The average salary for a cloud engineer is $111,165 per year.

Chapter 12

Eight of the Best Entry-Level IT Jobs and How to Learn Them

What are eight of the best entry-level IT jobs?

1. Help desk analyst
2. PC technician
3. Computer operator
4. Software developer
5. Cyber security technician
6. Front-end web developer
7. Quality assurance (QA) analyst
8. Database developer

The demand for tech talent is so strong right now that skilled IT professionals could spend half their days answering messages from recruiters on LinkedIn. But what if you're looking to break into the industry and haven't yet built a professional track record and

reputation? In that case, you'll be looking for an entry-level job that can be a springboard to a successful and lucrative tech career.

Whether you're a recent graduate or a tech enthusiast who wants to turn pro, here are eight entry-level tech jobs, their must-have requirements and some insider tips on the skills and qualifications that could give you an edge over other candidates applying. You can find the starting salary midpoints for technology professionals in the latest Robert Half Salary Guide. Note that starting salaries can vary greatly depending on your experience and expertise, market demand for the role you're targeting, and company size. That's why the guide separates them into percentiles based on the attributes a candidate brings to the table.

1. Help desk analyst

Many tech workers have launched their careers on the help desk. Typically, you'll start at Tier 1, triage work, where you'll log incoming calls and offer help for relatively straightforward matters. Calls regarding complex issues are escalated to Tier 2 for more in-depth support. Even if you don't come in with existing knowledge, what you learn at Tier 1 will help you build a foundation as you move forward in your career. Many companies will provide on-the-job training to help you grow your skills.

1. Must-haves: Relevant soft skills such as problem-solving and grace under pressure are essential when

working at the help desk. If you have experience dealing with demanding customers — a seasonal job working as a customer service rep, for example — highlight it on your resume.

2. **Can give you an edge:** While you may not need advanced technical knowledge at this stage, understanding the basics of the topics you'll handle can place you ahead of other candidates. For example, if the help desk fields networking queries, a bit of networking savvy can go a long way.

2. PC Technician

If you like taking things apart and, crucially, putting them back together again, this could be the job for you. PC technicians offer hands-on technical support in an enterprise environment. They install hardware and software, diagnose problems and coordinate repairs. These days, many PC technicians spend at least some days working from home, remotely accessing the devices of clients or colleagues to help them with issues like app installation and troubleshooting, sluggish performance, and malware.

1. **Must haves:** You can secure this entry-level IT job by demonstrating solid knowledge of PC hardware, networking and Windows, as well as an ability to learn quickly.

2. **Can give you an edge:** Obtaining a CompTIA A+ Technician certificate is relatively affordable and can be acquired within a few months. While Windows remains dominant, a grounding in macOS and Linux looks good on your resume and opens the door to companies that use those operating systems.

3. Computer operator

Here you'll keep the company's IT infrastructure up and running. A job as a computer operator can involve a wide range of functions, including — but not limited to — troubleshooting networking issues, performing preventative maintenance on hardware and software, executing batch commands and checking error reports.

1. **Must-haves:** Because the role is varied, it's crucial to have technical knowledge in hardware, software and networking. Be prepared to answer some challenging questions about these topics at the interview stage.
2. **Can give you an edge:** A background in Unix can set you apart from the competition, and stellar communication skills can help you seal the deal.

4. Software developer

In this job, you'll build applications, usually using compiled languages like Java and C++, fix bugs identified by quality assurance

and provide guidance and support to the program manager or product owner responsible for application deployment.

1. **Must-haves:** Junior developers typically have a bachelor's degree in computer science or a related discipline. However, those without degrees might be able to catch employers' eyes by engaging with the development community through hackathons, open-source projects and making their code available on GitHub.
2. **Can give you an edge:** A software developer generally works with a larger team, guiding each project through a development cycle. Familiarity with software development methodologies like DevOps and Agile can score you major points with hiring managers.

5. Cyber security Technician

Cybersecurity is booming, with many organizations scrambling to raise the drawbridge against malicious hackers, ransom ware gangs and other bad actors. As an entry-level cyber security technician, you'll perform hardware and software updates to protect users against known vulnerabilities and monitor firewall logs and network activity for suspicious behavior.

1. **Must-haves:** Most employers expect applicants to have at least an associate's degree in computer science or a

related discipline. However, with demand for cyber security talent currently outstripping supply, hiring managers will also consider candidates with two years of work experience in a cybersecurity-related role.

2. **Can give you an edge:** Entry-level cybersecurity certifications are highly valued by employers and relatively inexpensive to obtain. Good options include CompTIA A+ and CompTIA Network+, EC-Council Certified Ethical Hacker, and Certified in Cybersecurity from (ISC).

6. Front-end web developer

This discipline has become more complex in recent years, with end users now accessing websites on screens as tiny as smart watches than and as large as widescreen TVs. Front-end web developers combine an understanding of design and usability with practical development skills in web-related languages to create functional and attractive environments for users.

1. **Must-haves:** An impressive website and portfolio are essential to show employers you can deliver on website responsiveness and convenience. You should be knowledgeable in HTML, CSS and JavaScript, and you may need experience with testing procedures.
2. **Can give you an edge:** A hiring manager might see you

as an excellent investment if you can prove you're on the path to becoming a full-stack developer — that is, a professional who manages both the front end and back end of web development. So, if you're working hard to gain proficiency in scripting languages like PHP and Python or database management systems like SQL or MySQL, emphasize this during your application.

7. Quality assurance (QA) analyst

These professionals are central to the software development process. Before applications, games or websites are released, they must pass through rigorous quality assurance testing. QA analysts are responsible for this, using a test plan and tools to identify any bugs or inconsistencies that need to be logged and fixed before products are released.

1. **Must-haves:** An IT-related degree and a working knowledge of software development methodologies like DevOps and Agile are generally preferred. You must also be an analytical problem-solver with exceptional attention to detail.
2. **Can give you an edge:** You can demonstrate that you understand the basic concepts and methods of software testing by earning the Certified Associate in Software Testing (CAST) certification.

8. Database developer

Database developers (also known as database programmers) create databases, often working as part of a larger software development team. They retrieve, add, update and delete data, mainly by using some variation of the SQL language. Because different database systems use different variations of SQL, early-career database developers need to choose a system to specialize in. (You can learn others later.) Oracle and Microsoft SQL Server are good choices if you want to work in a large enterprise, while MySQL skills are highly valued by smaller companies engaged in web development projects.

1. **Must-haves:** There are two paths to becoming an entry-level database developer. The first is having a bachelor's degree in computer science or a related subject. The second is to pursue a certification, such as those offered by Microsoft and Oracle.
2. **Can give you an edge:** Don't have much work experience? Build your own database and add it to your portfolio! What it contains is unimportant — populate it with your favorite movies if you like —but it must be designed from scratch using SQL.

Tips for landing entry-level IT jobs

No matter what IT position you're seeking, the following tips can

help you on the job hunt:

- Use your personal connections. Who you know can be as important as what you know. A family member, friend, mentor or former professor may be able to get you an interview for an entry-level IT job.
- Ramp up your networking. There are several virtual networking options you can choose from, such as hackathons, GitHub and open-source communities.
- Cultivate an online presence. Recruiters actively search for candidates on Facebook, Twitter and sites like Stack Overflow. However, LinkedIn is still the best place to get noticed. Treat your LinkedIn profile like your resume — keep it updated and mention any soft skills that can help you fit into a company's work culture, handle stress and communicate clearly.
- Work with a recruiter. Specialized recruiters, like those with Robert Half, have access to positions you might never find on your own. Meet with an IT recruiter to discuss the type of role you can reasonably expect to find with your current level of education and experience and what you can do to increase your odds of landing an entry-level tech job.

By definition, entry-level job candidates lack the experience employers are looking for. But in this talent-short market, many firms are willing to take a chance on an adaptable, resilient worker and a quick learner.

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Part Two

EXPERIENCES OF PEOPLE WHO ARE INTO TECH

In this part, we will be sharing some of the experiences and stories of people into Technology in the Northeastern Nigeria and some few other states. We have been able to identify some of these people in the Northeastern Nigeria, starting from Adamawa state, and had an interview with them on how they started tech and how they were able to sustain their tech companies.

SA'AD AHMAD SA'AD

Founder and CEO of HackSAS Tech Community in Adamawa state. HackSAS Tech community is a tech innovative and social enterprise community where they do community services for profit. They inspire, mentor and train tech enthusiasts in achieving their mission. They also organize events, workshops, meetups and hackathon. They host programs to inspire people, give them mentorship and training. HackSAS Tech Community are also coming up with a platform where people can build their online community to connect with other people in tech and engineering.

Tech starters are people who are passionate about Technology or who want to start a startup in tech or career. In HackSAS, they inspire people about tech and when the people are inspired to start their tech, they provide mentorship for them. They also help people to choose the different career they want to go in tech, how they can do it and also monetize it. Tech starters need inspiration because they are just breaking into the tech and they therefore they need mentorship.

He defined technology as a solution. Back then in a local system, if someone wants to make a call or write a letter to people who are far will have to go to post office to transfer his letter which takes days, weeks, months and sometimes years before the letter would be delivered. So, as could be seen, technology has solved this very problem. Technology has solved a lot of problems by creating the new way of doing the old things, like using smartphones to call or send messages within seconds.

He started tech since he was in his senior secondary school (SS1) after reading a book titled: "GSM MADE EASY." Back then he didn't have passion for technology as he wanted to be a great scientist but later on saw value and future in tech. Therefore, he switched his career. He obtained a National Diploma in Computer Science at Adamawa state polytechnic around 2016-2018 and graduated as a software director.

He started his HackSAS Company in his final year, he didn't have

any money. So he searched for some companies on Google that empower people based on the mission of his company. So, according to him, if one wants to start a tech, he/she needs to search, first, who is he going to partner or do the business with before going into the tech.

He found a company "MAJOR LEAGUE HACKING." Major League Hacking is a global hackathon league where they are training and empowering people (hackers means people who are into tech, not the hackers that is mostly known that break people's devices to steal or destroy their devices and steal information.) HACKERS in the tech field is known as people that are into tech, as just explained. This major league hacking empowers people to go into tech such as building websites for free. So, he signed up as a local organizer with them around 2018 and launched his startup with them on 1st December 2018 on their Local Hack Day. The event was successful as they helped, guided and mentored him on how to do it. He started growing and building his business, teaching people about science, technology, engineering and mathematics for free.

Today he has a lot of national and international partners. He has suffered while building up his company, learning a lot of skills and building up opportunities where there was no opportunity. He started because he felt being self-employed gives an individual freedom to work freely and earn more than a government employee. More especially in a country where there are millions of jobless

graduates, starting a tech was his best alternative, despite the economic hardship on almost half of the Nigerian population, just like the saying goes "great companies are built in hard times."

The greatest motivation he had while building his tech company was faith. He had faith that he could do it and he did it. To make life out of people meaningful, he employed numbers of youth. In addition to his faith, as motivation, he had passion for tech, which as explained in the previous chapters of this book, a tech starter needs passion to start. He worked hard. More to that, tech is a career that one works based on their experience not certificate and it also gives freedom to work remotely, that also strengthened him.

His greatest challenge was finance. He didn't have the money to start up the business. Having the right team to work with him, those with the passion, goes second in the list of the challenges he had encountered. Even high-tech companies sometimes face these challenges. Sometimes people don't stay in difficult moments, therefore, they leave you up to it alone with the company. With these challenges, he has had thoughts to quit. But that had never stripped him of his struggle to have a tech company. Anytime he felt like quitting, he remembered his dream and future.

The advice he has for young tech starters is to have passion and idea of what they want to do. They need to set a goal and that should not be money. They should not only take online courses but attend physical events to network with people, because there, one gets to

meet people who could help in proffering solutions to the problems one couldn't. “Follow the master, learn through the master and be the master”, “Today is hard, tomorrow will be harder and the day after tomorrow is beautiful”, and “live today plan for tomorrow and forget yesterday because it sucks” are the quotes that helped him to make plans and set goal.

He further said that, Technology is the future of Nigeria. In 2019-2020, they said the future is private. In 2021-2022, they said the future is open, but lastly in 2023-2024, we can hack the future to see what is in it, live in the future and build what's interesting and live in the future and build what is missing.

He is of the opinion that we need to focus, because Nigeria has the best, talented and smart people. Bringing these people to work together is of paramount significance. If we could work on agriTech, nature and economy, then we are done in making Nigeria better. Other developed countries import few to their countries and export more, but Nigeria imports more than what they export, so that has contributed a lot in destabilizing the country.

HackSAS Tech Community offers products and services like;

1. Empower youths with Technological skills, to be self-employed for socio- economic development.
2. Partners with organizations and companies to offer services.
3. Build a community where people connect.

4. Work on a local smart order where small businesses can be uploaded on maps so that they can have an effective communication and connect with customers.
5. Build, inspire, train and mentor people.

UMAR FAROOQ

He is a software Engineer, from Adamawa state Yola, Nigeria. According to Umar Farooq, technology is the act of using a gadget to solve a problem with the electronic device. He also defined a tech starter as a person who initiates and build a technology. Umar Farooq grew up having passion for tech, he started tech right from his secondary school days. He had interest of in venturing into software engineering after his secondary school education, and, he is now a graduate of computer science.

He once attended a Hackathon (Hackathon is the gathering of people to come and identity a problem in a field or environment and then brainstorm, come up with a solution, write a prototype or MVP (minimal viable product) that can help solve a problem). He was invited to a competition and was giving a tech problem to solve and after the evaluation of the solution he proffered, he was invited to pitch it to the Nigerian Vice President, Professor Yemi Osinbajo around June/July 2018 and was awarded champion in the Northeastern Nigeria. Because of that, he was very happy that he has done something good and decided to keep on the good work in his

tech and stop doing Tech the bad way.

He started with cyber security, though he wanted to be a software Engineer, he then had to resign from his work as a penetration tester to pursue his career in software Engineering. He also left his career as in a cyber security to focus on the software engineering he had dreamt. He thinks of a problem, write and code and implement it to solve the problem. Farooq now creates software for people based on the type of problems they want to solve with it.

His motivation is passion. He had passion for technology since childhood. Playing computer games like mortal combat and other computer games remained his hobbies. Therefore, this triggered him to start a tech. One of his biggest motivations is accomplishing something and he likes competition to make him grow to solve more problems.

While answering the question whether tech is difficult or simple, Umar Farooq, said that it depends on the level of interest or passion of the person that wants to do the tech. If someone is passionate about tech, they will not notice the level of its difficulty. But if someone finds joy in tech, then they won't see the difficulty. To Mr. Farooq, tech is both difficult and simple, depending on the level of interest the person that wants to do the tech has.

He also said that tech is taking the entire world and we need it in Nigeria, the federal ministry of digital economy that is responsible for tech should put more efforts to see that technology space has

been utilized in the country. He further said that if technology could be used in every aspect in Nigeria, the country will grow faster. According to him, Tech can be used in health, education (school management systems), Blockchain technology in banking systems and many more. With this, Nigeria will find most of its work easier and faster. What matters are thinking, crafting solutions and implementation.

Finally, Farooq said that his advice for young tech starters is to first ask themselves if they really want to do tech. If the answer is yes, then they should identify what they are good at. He said that tech is not only about coding, software and PC maintenance or networking but there are lots of fields in tech such as product designing, 3D modeling, animations and many others. For young tech starters, it's good they first narrow down to a particular field of tech and not jumping from one to another. They should not look at what other people are getting but to keep their work simple and not to give up even if at first it doesn't work. They should keep working on their tech, find mentors to help them and learn from their mistakes to help them do better. Lastly, Farooq said young tech starters should share their stories to potential employers and clients.

ABUBAKAR SADIQ ISMAIL

A Software Engineer, from Adamawa state, Nigeria. He started tech after his secondary school during a period of strike before starting his

computer science degree. In an interview with him he said; "Tech is the word we refer to the industry of software development whereby programmers, software engineers, designers and program managers collaborate to build and maintain programs/softwares' that solve human problems and make life easier."

Software engineering is the tech field he is currently in, working and learning with. He said he has never come across the word 'tech starter' but from the indication of the two words, he understands that Tech starter is a person who is just beginning his career in the field of tech.

He had the passion for tech and with time he began to see tech as a career that could serve as a source of income. In his work as a software Engineer, he has co-founded getbime.com, built Notify mobile application and built nobaafrica.com. Now, he works at etijar.com. He also serves as lead of Google Developer Students Club at Modibbo Adama University Yola, Adamawa state.

So, it transited from pure passion to passion, solving problems and a source of income. It's just curiosity and passion that drive him and nothing more or less. His challenges are; wanting too much and multi-tasking a lot which lead to lack of focus on single stuff. However, he is working on how to solve it. What helps him is taking things easy.

His Advice for young tech starters is to focus on fundamentals, not to rush it and take time to learn. Yes, building tech is difficult but it is

not impossible. He conclusively added that; "We have a lot of problems in the North East region and as problem solvers, we see those problems as opportunities to tap into and come up with elegant solutions to them that will make life easier for people and can also be monetized like agriTech, Health Tech, and so much to mention."

SOLOMON MISSION KYAGYA

He is a builder of drone and a student of Electrical and Electronic Education at Modibbo Adama University (MAU) Adamawa state.

In an interview with him, he defined Technology as a machine that a person uses to solve a problem in a society or country at large. He also defined a tech starter as the beginning someone in tech. Solomon Mission Kyagya developed interest in building Technology since he was a kid. During his secondary school days, he started building his tech with the support of his dad who helped him, financially, to purchase some materials. When he was 12 years old, his dad began to give him his laptop to browse the internet and watch tutorials on technology. It was from there he gained the knowledge of tech. He used to practice things like the blinking and 555 timer IC. He then built an audio amplifier. During his secondary school days, he studied motor vehicle maintenance and he built a prototype of a RC excavator caterpillar used in digging holes. He emerged 1st position, as he represented his school

Government Science and Technical College, Yola in a National Jet Competition which was held in Lagos 2020.

His first trial was when he bought an Arduino RC, used in programming and mostly Science Competition which was not that costly of then--only five thousand naira. He used it to build a Radio Control (RC) plane that moves from the ground and fly using a remote control but he was not successful in the plane because insufficient materials which are not found here in Nigeria. Then he decided to switch to building of drones (meaning: drone is any unmanned aerial moving object like plane or vehicle that can be controlled from a certain place using a remote, especially in surveillance, security, monitoring climate and filming.)

He used the Arduino to build drones that are quadcopter, tri- copter and bi- copter which actually work and fly. He was limited to some areas because he didn't have the money to buy some of the materials which sometime have to be purchased from outside the country. Fortunately, he was able to build a drone that worked and still works. He also used the propeller in his drone to make the thrust that will make the drone work. Today, he wishes to use his drone especially for security purposes by attaching a camera to it, send it out far to detect enemy's hideouts and he believes Nigeria needs this because it will greatly help the country.

His motivation is innovation and he likes doing what he does. He started because he wanted to achieve his dream. He wanted to study

Aeronautic Engineering but the course was not available in Nigeria. Therefore, he decided to go for Engineering, yet Electrical and Electronic Education later remained the last and final alternative. He wishes to build more drones and plane to serve Nigeria to be better.

On the other hand, his challenges are; he needs people in the technology field to help, guide and mentor him as he grows in the tech, but that couldn't be found. His other major challenge is financial problem as building Technology needs money, and some of the material needed to build his tech are not available in Nigeria. He has deprived himself luxurious life just to make sure he kept on learning, practicing and building. He believed that one day he'd definitely enjoy the tech he's been building. Solomon added that tech is difficult to build but with passion one will not see the difficulty. But in building tech you will have to spend a lot of money and resources.

He emphasized the advantages of drones in the field of agriTech and security, which put Nigeria in the list of the countries that are supposed to invest in tech as the country has been facing the issue of insecurity for over a decade and that the current administration prioritize agriculture. And, to make it short and precise, in AgriTech, the drone can be used to spread farm chemicals automatically.

His advice for young tech starters is to keep learning and striving. As

a tech starter, Solomon advice that they should tell their parents and people around them about their idea and what they are doing, so that people can see the value in it and can be of help financially.
Lastly, he has been into tech for almost a decade and he is open for people of interest to invest in him. He wants to go far in life, and build things that will help the country and the world at large. Elon musk has always been his role model.

MUAZU MUAZU

He is the founder of IT GUYS, a certified Information Technology Practitioner, a member of the Computer Professional Registration Council of Nigeria (CPN), a member of Nigerian Computer Society (NCS) and the Public Secretary of the NCS, Adamawa State Chapter.
Muazu, in an interview with him, defined Technology as a means of solution to everyday problem and a process that is constantly evolving, be it a simple or complex task. He said Technology is applicable in every aspect of life such as in IT, Artificial Intelligence, Machine Learning, Robotics, Virtual Reality, Crypto, Internet and more. He sees a tech starter as anyone who sees a problem in the society and tries to solve it in context of IT, health, finance and transport.
Muazu started Technology because he it has been his dream to build a creative world where people could own up to their craziest ideas

that have positive impact on the society. He started IT Guys and IT GUYs is more like a “Go to Guys" where they solve IT problems. It started in 2012, after his Master's Degree. He attended an event on vaccine introduction in the country and during the event, there were lots of glitches while the program was going on and all he kept hearing was "where are the IT GUYs they should come and fix this and that.” After then, his uncle--a permanent secretary in the ministry of technology— who used to call him to rectify technological problems. One day, his uncle told him that he was going to be his IT guy. So, that gave him an inspiration to start what we have today as the IT Guys.

His motivations are entrepreneurs, creativity, innovations, institutions, initiatives etc. in tech with new, simpler, adequate and affordable solutions. And on the other side of the story, his challenges are always start-up, sustainability, patience and consistency to stay afloat the bottom line and he never gives up his aspirations.

The advice he has for young tech starters is to prioritize skills not qualification, though both the former and the later are important, the later has more advantages. More so, they should look round as the world is evolving, follow the trend and learn the productive skills that would make them entrepreneurs and self-reliant. He said that tech is difficult, he can't lie about it but someone needs to endure the ups and downs to do it.

Lastly, technology can help improve Nigeria because technology is a broad term and it does not focus not only on Information Communication Technology (ICT) but other aspects of technology that can help improve the lives and economy of the North East. Technology in Agriculture sector help farmers with access to information about weather forecast, farming/planting techniques, pest and control, seed varieties and characteristics connect them with other farmers through forums, social media groups, market prices and the entire value chain. In health sector, Technology plays a role by improving health care and addressing some of the challenges of human resources, data access and availability, new trends information on drugs and diseases. There are a lot of health inventions in tech that help from electronic, medical records, telemedicine, wearable devices, e- prescription and many more. In education, a lot of applications and online platforms offer educational materials, both for kids and adults, which are flexible for learning purposes. Technology has helped during covid-19 pandemic as some schools embarked on virtual classes to conclude their term or semesters. Recently, the report by the National Bureau of Statistics (NBS), indicated that the ICT sector contributed 18.44% to the total real Gross Domestic Product (GDP) in the 2nd quarter (Q2) 2022 and this is just the beginning of it and through the use of ICT, we can attain the Sustainable Development Goals (SDGs);

Goal 1 - No poverty and
Goal 4 - Quality Education

MUHAMMAD TAJUDEEN

He is a Community Manager, Mentor, and a Web Developer from Adamawa state. He also manages projects at Nuts Coders. In an interview with him, he defined Technology as an application of scientific study to improve human life in a practical way. Technology makes life easier for people day by day.

He started his tech when he was in college, his Physics teacher was his mentor and he inspired him to start. When he started, he had no computer to code. He has to borrow computer from his friends to do the coding and now he is a mentor, facilitator and a web developer. His major focus now is Augmented Reality and Virtual Reality because the world is developing and more tech opportunities are coming up. So starting the Augmented and Virtual Reality will make him meet the market demand.

His motivations are to help people and to make money through his tech. He wanted to become a medical doctor to help people before things switched to technology. His mother used to tell him that "if you help someone to become something in life, he will never forget you" so that moved him to achieve his dream of becoming what he is

today.

His major challenges are; when he first started, he had no computer and now people don't appreciate what's he's been trying to give them, especially when they organize a tech event, the attendance used to turn low. He said that tech is very difficult, and his advice for young tech starters are to take it slowly, be consistent and never give up even when they think it is not going to work out.

Awareness is one major factor that can lead to develop Nigeria.
Imagine a work where everyone knows a great deal about technology and some of the products he has built are; BIME, SRMS, CHOPIFY and NUTSCODERS tech community & support.

ADAMU ALI MUSA

Adamu Ali Musa from Yobe state, Nigeria. He is into building Technology. These are the list of the things he has built, some are actually working and in use, while the other are just prototype or models;

1. Wireless car provide a service
2. Mobile phone without SIM card and credit only charge is used
3. Sprayer machine
4. Solar/batter water pump machine

5. Solar grinding machine
6. Solar electric motor car
7. Construction solar machine best pee
8. Thresher machine
9. Drone/helicopter
10. Batter/solar inverter and soldier iron

He started tech when he was just a kid. He was building toy cars for them to play with and while growing up, he discovered his interest and passion for Technology. Adamu defined Technology as an intelligence given to humans by God, to help them solve the problems of the society and in human life. Technology helps people to look at the areas where humans are suffering and to help them provide solutions to them and a way forward.

He developed interest to start building Technology because of the situation in his community. There was nothing to show of technology skills and works were not many in the community. People didn't care about technology in the state and therefore they were suffering while using old-fashioned equipment in agriculture and the other sectors. He started by creating the sprayer machine, pumping machine and other farming equipment. People mostly used the pumping machine that uses fuel to work and that needs a lot of money. He also looked at the situation of their market people

in the community, because most of them didn't have sufficient power supply to their shops or run their day-to-day activities, and he created a mini-inverter-- they can connect it to their shops to give them electricity-- for them to use. He also created a soldier iron to draw the electricity for them to charge their phones. His motivations are helping people and creating a grinding machine that uses battery or solar.

When he started the tech, he was making handset and wireless cars, some people misunderstood what he was doing and started coming to him to warning him to stop, and was even arrested. That remained his greatest challenges. Yet, he didn't despair and continued building his Technology. There was no any support from the government has also been a challenge to him. He added finance to be one of the challenges he has faced while building his tech.

His advice for young tech starters is patience because Technology is not easy to build. He further said that as a tech starter, one needs to keep on learning and practicing.

Currently Adamu Ali, alongside his friends in tech, is working on a tech foundation Darin Science Inventions and Technology Foundation in Yobe. Under it, they want to start building or creating electric cars, bicycle and others things.

Lastly, he said that Technology will help to improve Nigeria. He added that, most foreign countries in the world today are developed because of technology and Nigeria should emulate that and invest in the technological aspect so that they can start building and creating theirs. We don't have to buy other people's Technology; we can build ours, because Nigeria has many talents and all they need is support from people and the government to help them grow.

JOHN NUHU

John Nuhu is from Taraba state, a web and app developer. In an interview with him, he defined Technology as the application of scientific knowledge and a tech starter as someone that is in his early career in tech. John developed the app; MyTsuApp; an android application and a web application that is used by students to upload and download pass questions. The app gives easy access to Taraba State University website and students' portal. He also created the 9jaWokohitApp: an app that gives easy access to a blog with direct contact with the blog manager and his personal social handles but the 9jawokihit server is crashed, so the website isn't active.

He started developing interest in Technology since he was a kid, he loved playing video games as a kid and was pretty good at it. But it came a time (around 2017/ 2018) that he got curious and started

asking himself questions about how games are being made. So, he started doing some researches about games, and that was when he got to know about the programming languages like C #, C++ and Java. But then, he didn't know what they really were or how to use them, so he downloaded some videos on how to write simple program with Java. But he realized that he needed a special software installed on a computer called The Android Studio which by then his computer system wasn't enough for the software requirements, so he started looking for how to create android apps using phone. Definitely, that was when he got to know about an Android app called SKETCHWARE.

Early in 2020, before the covid-19 pandemic, he did a course on Internet and Web Design in school which marked his first encounter with web development (HTML, CSS & JAVASCRIPT).

As Steve Jobs said "Programming also teaches you how to think" has always been his motivation. He realized that when he codes, it's easier for him to solve other problems that are not based on computer. Initially it was his curiosity that led him to tech, but he later realized it's much more than that. It's just the love he had for it.

His challenges are sometimes in internet connection, more especially YouTube, to watch and download videos and tutorials

while practicing new things he'd learnt. And these downloads and watching videos require a lot of data to use. More to that is his laptop.

How he solves some of his challenges

When it comes to creating algorithm, he usually seeks help from people he looks up to in programming and they always tell him how to solve the problems. When it comes to syntax, how the programming language is written, he finds his way out on YouTube or a web called Stack Overflow. When it is a challenge that has to do with his PC (personal computer), he does tutorials for other people to get some stipend to fix it. As they said "Nothing good comes easy,'' so he can't say building a technology is easy, yet not as difficult as people exaggerate it. But to build a tech it needs a lot of time, attention and teamwork. So, the better team you've got, the easier you will find it to build a tech.

His advice to tech starters is to avoid procrastination, because one must not have a laptop as a tech starter but a smart phone. Secondly, an experienced person in that specific tech field for guidance. Thirdly, sacrifice of time and resources and lastly networking.

Conclusively, John said, with sufficient tech activities in Nigeria, the relationship between Nigeria and other countries will be good

which will be of advantage to the country. Also using technology applications, especially in elections, it get Nigeria rid of riggings. Nigerian should imagine having a Tech firm like ALPHABET (Google) or META (Facebook) with hundreds of thousand employers, the rate of unemployment will surely be mitigated to the barest minimum.

ANAS UMAR BABAGATA

Babatagata Anas Umar is from Gombe state. He is an ICT Entrepreneur, a computer science lecturer, an environment Activist and an advocate for women in technology and digital gender equality. In an interview with him, he defined technology as the application of science and engineering to provide products, services and solve problems, thereby saving times, energy and resources.

Well, he has passion for technology particularly Information Technology and Engineering since his childhood as testified by his mother. He used to design machines, providing technical support and solve computational problems. He used to configure internet services back then when mobile phone has to be configured before access to internet services.

After he finished his secondary school, he realized that he has passion for Computer, therefore, he applied for Information

Technology as his first choice and Computer Science as his second choice at Modibbo Adama University, Adamawa state, and Federal University Kashere, Gombe respectively where he studied Information Technology, learned Technological innovation and met different people.

His motivation is that, as the world goes digital, almost everything is being computerized and technology is taking over jobs etc. It's necessary to learn and use technology to solve problems, provide products and services, for competitive advantages, problems solving capabilities, efficiency and effectiveness.

Most of his challenges are lack of resources especially during computer training. They don't have enough resources that will accommodate the participants. They also lack technical, financial support and collaboration and mentorship

Well, they were able to solve some of their challenges through partnership & collaboration. They partner with some schools with ICT Labs and resources donated by NITDA, NCC etc. for their training and they are accommodative; collaborated with local and international ICT organizations to achieve their common goal; contributed some money and requested sponsorship in funding their projects and get more participants by partnership with some

instructions of higher learning. They engaged some ICT consultants to work together for mutual benefit and successful development.

Technology is not really difficult, according to him, rather, it is challenging and that's simply because it's evolving. It is required to maintain professionalism and expertise and keep up research and development. On the other hand, the difficulties may be as a result of lack of availability of some systems or technical support.

He advises young tech starters to learn technology and apply the knowledge and the skills they acquired to solving problems and for entrepreneurship development. This will help in creating job opportunities, capability building and unlock their potential.

Some of the products and services they have built are:

1. Electronic Voting System
2. Electronic Shop Registration and Payment System
3. Awareness using Multimedia and Animations
4. Information Systems and Database Management
5. Computer Training and Digital Skills
6. Environmental Advocacy and Afforestation
7. Campaign for women in technology and digital gender equality and
8. Training and Campaign on cyber security and data protection.

Lastly, he said that Technology can help improve Nigeria because technology has tremendous advantages.

1. Security: It will help in securing the country especially at this stage of insecurity. Satellite and Drones can be used for surveillance by Defense or Intelligence authorities to combat Boko Haram terrorists and kidnappers and trace their hideout.
2. Farm Mechanization: This will help to ensure food security and improve productivity. It enables farmers to get maximum output using small input by saving time and energy
3. Healthcare: In health sector, nowadays, robotics and machine can perform complex operations and surgery within a shortest possible time and
4. Production: Machine are fast and robust; they can produce products or render services with efficiency.

The power of any country is determined by its economy and technology. Therefore, technology advancement and innovation will attract foreign direct investment, ease doing of business, save time, cost, energy and resources etc. According to Prof. Isa Ali Pantami, Minister of Communication and Digital Economy, Economic Development; Information Technology is the top contributor of Nigerian GDP, it contributes 18.4% in Q2.

SULAIMAN HABIB ADAM

Sulaiman Habib Adam is a digital skills Advocate/IT Support Specialist from Kano state. He started as an apprentice on PC Maintenance sometimes back while waiting for admission into the university. That was the moment he got interest in tech. He couldn't stay too long on that as he got admission to study mechanical engineering, although his course of study was not IT based, his interest in Tech still remained and he continued to dabble in one thing or another, from IT support to graphics and a little bit of networking. Some of the products and services he has built as part of a team are; Brainwaves, Edututor, 3d printed limbs and Kid coders.

It was when he came to the Northeast (Adamawa) for his National Youth Service Corps (NYSC), that he got a more definitive line in his journey. He then teamed up with some techies who were all Corps members from different localities. Apphia Solutions – the company that was engaged in developing Management Portals, and Educational Software – was his startup. Unfortunately the startup failed less than a year. After his youth service year, he continued to do his own personal consultancy. Then, he got a part time engagement, Mind the Gap on Their Google Digital Skills for Africa Campaign, where he trained community members on Digital and the tools of digital.

Right around that time, he was also privileged to be an intern for the

first 3D printing Lab in the Northeast at the North East Humanitarian Innovation hub, where he was part of a team that were engaged in 3D Modelling, Designing and printing arms for persons who had lost a limb. They are also developing into robotics such that the Arms would be automated. In between all of this, he had done lots of other projects with friends and techies, like Kid coders by Syscraft Technologies – a training program for kids across secondary schools to catch them young and so on. In recent times he has mostly invested in SoftechVille, where he serves as Director of Operations.

His Motivation are the desire to see more people embrace digital and his society to leapfrog and level up with the rest of the world in technological advancement, and the natural love of tech and wanting to be able to advocate for it and guide more people to embrace it. His journey to tech has been a gradual one, he went into tech because of his passion for computers in general, and then it developed to a passion for the process and all the other components of tech.

His challenges were, at the beginning of his Journey, knowing what to do, what particular direction to follow, and that caused him to waste time just sticking his fingers everywhere. In short, he lacked focus.

His advice for tech starters is that they should be specific on what they want to do, and be patient to master that field. He said that tech difficulty is depending on what is being built, difficulty levels vary, for building something good and sustainable, a lot of work and patience have to be put in.

Technology can improve Nigeria in the ways of; invention–which would drive improvement of life and open up the economy via more foreign investments; technology drive–which will create more jobs and help fight unemployment– and investing in proper technology orientation would fight off Youth restiveness.

HANIFA MOHAMMED

Hanifa Mohammed is from Bauchi state, based in Abuja. She is the Founder/C.E.O of a tech girl's hub and the named Raube Zaman in Fulfulde which means Modern Girls in English. She is a certified Digital Marketer, and a self-learned Graphic designer. In an interview with her, she defined technology as a broad knowledge. She understands Technology as the practical application of knowledge especially in particular areas like Engineering, Sciences, and the ICT itself. She added that the rapid shift in technology over the last few years has created an entirely new world in which we find technology at our finger tips.

She started tech because of the passion she had for it. She owned her very first desktop at a very young age and computer studies has been one of her best subjects in primary school. She saw lots of amazing things in tech. After her secondary education, she proceeded to University of Abuja for a Diploma Course in Computer Science. From there she went to Gombe State University in 2014 and obtained her B.Sc. in Computer Science. Upon graduation in 2019, her passion and career contributed a lot in driving her deeply into tech.

Her motivation is that, as an advocate of girls in tech, "Raube Zaman" was born out of passion in 2018. Looking at the backwardness of the region in education, especially the girl child, she believe the most suitable solution to the problem is through the use of ICT. Still, the major problem she has identified, so far, is the lack of ICT knowledge amongst the girls of lower class in the sub region where she derived her mandate from. So far, she has achieved quite a lot in providing ICT knowledge to the targeted girls.

Her challenge is Funding more especially with the current inflation. And she said that, 'Technology is really fun!' Her advice to tech starters is, as she was once there, her message to never stop practicing. One is going to fail, but let this failure be a lesson learnt and success be the lesson applied.

The fact that Technology is widely accepted as the key driver of economic growth of a country, it can improve Nigeria if wisely prioritized. She believe technology can improve people's standard of living, increase job creation, help reduce poverty, and lead to a greater variety of new products and services. Hanifa strongly believe, if technology is properly deployed, it can help in solving most of the security and economic problems in Nigeria within a very short period of time. To conclude, she said 'the government should increase the level of funding to startups and local contents should be prioritized.'

ALIYU AYUBA

Aliyu Ayuba is from Bauchi state. He's a Computer Scientist currently running project at Google Brain research team. He attended many projects and startups, both locally and internationally. He also attended hundreds of Conferences across the world including UAE, USA, KSA among others and 1st position NITDA startup at Uniport 2019, expert in Artificial Intelligence. And currently winning a perk of 25k USD at Entrepreneurship World Cup.

In an interview with him, he said because he is not credentialed in any particular way, coming from a self-educated perspective, it has been difficult to crack the vault of mainstream dialogue. While he

has certainly done with his homework over the past decade, exploring hundreds of texts on Computer Science, Societal Problem, and Economics, he has no plaques or honorary degrees to impress people with. He's compose as always to build team so that they can deliver a lot of ideas.

He defined Technology as an artifact made through a systematic application of knowledge and used to reach practical goals. That recognizes the important connection between global resource mismanagement and problems such as war, climate change, poverty, and hunger. In a broader context, these are all detrimental results of the current socio-economic operating system. In response to these challenges, our organization presents solutions through the holistic application of science and technology; two areas in which recent advancements hold the potential to make far-reaching positive impacts.

However, while technology may succeed in gradually alleviating some of these problems, they cannot be resolved by simply addressing symptoms, as they do now, because they are byproducts of a much larger problem. Another major issue is that business interests currently require short-term planning and timely returns on investments. For these reasons, in addition to their expanded technical approach, their proposals include an alternative economic

model which overcomes these artificial barriers to planetary wellbeing.

Their methodologies are designed to realize the full potential of science and technology to achieve social betterment for all living systems. They advocate new ways of thinking and living to enable human beings, technology, and nature to progress sustainably. The Deep Consciousness computer Project proposes an alternative vision of what the future can be if they apply what they already know in order to achieve a sustainable new world civilization. It calls for a straightforward redesign of their culture in which the age-old inadequacies of war, poverty, hunger, debt and unnecessary human suffering are viewed not only as avoidable, but as totally unacceptable.

In his work, he's not attempting to predict the future. He is pointing out what's possible with the intelligent and human application of science and technology. What they suggest is applying the methods of science to the social system for the benefit of all humankind and the environment.

Given the emphasis, our society places on perceived authority, the cynicism he often sense is not surprising. It is also natural that in our fast-paced, time deficient world, most people simply want someone

to "tell them what to think." Yet there is a serious problem here, as there is a tendency by modern academia to perpetuate existing normative assumptions—especially when it comes to socioeconomic theory. Most people who rise through the ranks of orthodox higher education experience an almost inevitable process of indoctrination. As with many cultural matters, so much has been pre-supposed about our way of life over time, people tend to assume the social institutions around them are all there is and ever was. Values become entrenched, identities become locked, and dogma is cultivated.

The prevailing intelligentsia is far from exempt from this "normalizing" process and sometimes one needs to exist far outside the box to make a difference, that stated, I decided I would let down my guard on this issue and try the experiment of explaining a little about where I came from and why I have the focus I do. This humanizing aspect will also, I hope, trigger associations within the reader that make the subjects more relatable. Surprisingly, it wasn't until he began to compile these stories that he came to understand just how predictable his life's unfolding has been. Many seemingly mundane events in his history have actually had profound implications hidden within. He simply didn't have the vocabulary at the time to understand them. However, he do wish to stress that these stories are not to be construed as actual evidence in defense of

the conclusions argued. The technical scholarship of this work stands on its own and the anecdotes are merely supplemental in the hope of sparking a better sense of connection to the reader.

Finally, he want to point out that there is some repetition throughout the work due to certain topics existing in multiple contexts at once, the chapters often cross-reference one another, weaving in and out. This is mostly done to bypass anticipated confusion or incompleteness. By far the biggest challenge in writing this text has been keeping things connected, properly supporting the larger arguments. As abstract as the following comment may seem, the kind of thinking required here is actually not linear, but systemic. What I mean by that will become.

MUHAMMAD HARUNA BALA (Techie Abba)

He is from Adamawa state. He is a tech You Tuber, a photographer, tech video maker--in Hausa language. He also does video coverage and editing. In an interview with Muhammad, he defined Tech as a branch of knowledge that deals with the use and creation of technical stuffs. He went further to define tech starter as a person who is starting to go into tech.

He started tech some years back, 2015 precisely, as a designer. Then he started learning computer maintenance. Around 2016, that's a

year after, networked with who could create Apps using Java programming language, then he started learning java, html, CSS, using mobile phone from them.

At that time, he was more focused on java than any other programming languages. Then he heard about Google developer group YOLA and attended their event for the first time around 2018. He met a lot of friends that are passionate about tech and mobile app development. There, they came together and came up with technological things that are of great impact to the state and the region at large. Around 2021 he co-founded BCH HUB alongside Zunnurayn and Munir.

BCH HUB is a tech and blockchain hub where they foster the adoption of cryptocurrency and blockchain in Nigeria.

His motivation is the motivation itself. Tech is a space where every day see a reason to continue. Motivations are all over the space from friends and mentors. He started tech because of his love for computer gadgets and he wanted to know how the magic of computer and internet works, solving local problems and getting knowledgeable.

His Challenges was when he started coding on phone and lack of

learning resources. But with time, he overcame all of that. His advice for young tech starters is that the future is bright for everyone who is ready to start, be patience, and learn harder, attend tech event, meet tech people, network, be active on the internet, focus on things that matter and lastly not go for many stacks.

He further added that building tech is not easy! More knowledge may be required apart from the tech skills one has, knowledge for the business, its legality and many more. Finally he said that Nigeria is one the largest tech spaces in Africa. When it comes to northeast, it is a place with knowledgeable tech people. Of that, not everyone understands his or her potentials. They have seen a lot of improvements over the past few years, a lot of startups and many amazing things. With Tech everything is easy and possible.

HANNAH KABRANG

Hannah is from Gombe, a software engineer and executive director of BLOOM INNOVATIONS http://www.bloom4stem.com.ng. In an interview with her, she said that she started her tech journey when she was offered admission to study computer science at the university.

She started tech to motivate young girls to embrace tech and solve the problems of the community. Her passion to see young girls in the fields of science, technology, engineering and mathematics (STEM)

led her to the establishment of Bloom Innovations -- a Nigerian based social enterprise in the city of Gombe. The mission of Bloom Innovation is to see young girls are actively participated in these fields.

Her motivation comes from her passion to see the North East developed in such a way that we more women would find spaces in the tech sector. There are quite a number of challenges she has been facing, some of which include the lack of man power, lack of facilities and equipment such as computers for illustration, and the greatest of the challenges is poverty.

Her advice for tech starters is to never give up on their dreams and set achievable goals. She also said that building tech is not difficult. And last, she said that Technology is the future of work, no girl should be left behind.