

Emerging Technological Trends



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President's Remarks



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Dear Distinguished Members,

I welcome you all to the third edition of the bi-annual Professional Services Group (PSG) publication. The PSG was established to provide a forum where our members can deliberate on relevant issues that will ultimately lead to the development and growth of the members.

The theme of this edition is "Emerging Technological Trends" and it focuses on Artificial Intelligence, Biometrics & Identity Management, Internet of Things, The Future of Payment Services, Blockchain and HealthTech.

In recent times, we have experienced rapidly evolving technological trends which have been disruptive and have revolutionized quite a number of businesses across various industries. New business models have emerged in diverse sectors ranging from Financial Services to Healthcare. With these rapid technological advancements, it has become a challenge for most companies to keep up with the latest IT trends. Therefore, for our businesses to benefit from these latest developments, we require proactive measures in order to gain competitive advantage from the innovation that comes with these trends.

Today, it is widely believed that with the emerging technologies such as; Artificial Intelligence, Machine Learning, Blockchain, etc. some human activities in the workplace as well as traditional tools currently being adopted in the workplace will be replaced.

However, there are certain misconceptions regarding disruptive innovations. While one school of thought considers these as solely new products, another believes that disruptive innovations help to smoothen business processes as enablers. Most times, disruption restructures existing processes with the utilization of fewer resources. This provides entry into disregarded segments in order to conveniently & swiftly create value for companies and consumers.

This publication aims to highlight what these disruptions entail and to also provide some clarity on the importance of embracing the era for the fourth industrial revolution and the future of things.

I am assured you will have an enlightening moment with this edition and commend same for your reading.

Thank you.



Chairman's Remarks



Uyi Akpata
Regional Senior Partner, West
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Chairman, NBCC Professional
Services Group

The COVID-19 pandemic you will agree has impacted the way we work, live and interact. Nigeria, as with most countries, is going through an unprecedented period of uncertainty with several known and unknown challenges that need to be addressed. The fact that no one is able to say for sure how long this will last makes the uncertainty even more unsettling. There is need therefore for business leaders and all of us in the NBCC Professional Services Group to prepare not just to deal with the current challenges but also ensure our readiness for the post COVID-19 era.

As we have seen over the past few months, digital technology is critical for navigating the challenges and operating in the new normal. Every day, we witness how digitisation is helping organisations deepen relationships with customers and create extraordinary value for their businesses. The time it takes for a breakthrough technology to reach the mass market has collapsed. Think about it; it took 76 years for the telephone to reach half of the population of the US, the smart phone did that in less than ten. And in the last few years, we've seen new applications of drone technology, microscale 3D printing of more and more products, agile robots that can do real work, AI assistants that conduct your banking transactions, cars that drive themselves and many other innovative uses of data from weather forecasting to agriculture, advertising, e-commerce, supply chain, audits etc.

All of these advances either help to solve complex problems or open up new ways of using technology to take advantage of opportunities or both. What's even more amazing when you think about it is that, the progress today is just the beginning.

Emerging technology strategy needs to be a core part of every company's corporate strategy. Business executives must sort through the noise to make clear-headed decisions about the most relevant technologies that will sustain revenue growth and enhance business operations.

This third issue of the NBCC PSG newsletter attempts to answer this question with articles focused on various emerging technologies and their use in various sectors. COVID-19 has shown how technology can be used to stop the spread of misinformation, for contact tracing, treatment development to find a cure and even autonomous vehicles and robots are being used to deliver food and medical supplies for those in quarantine.

The pandemic has also revealed weaknesses across supply and value chains, the need for relevant data and information and crisis response plans. Fixing these issues will create business opportunities for professional service organisations.

I am confident that in addition to bringing enlightenment, this publication will also inspire member organisations of the NBCC to begin to take another look at their business strategies in relation to use of technology, because having a digital strategy is no longer enough. You need a business strategy fit for the digital age.

I wish to sincerely thank all those who contributed articles and the members of the editorial board for another successful outing.

Happy reading.

Uyi Akpata is Regional Senior Partner, West Market Area at PwC and Chairman of the Professional Services Group of the Nigerian-British Chambers of Commerce.



Editor's Note

We started putting together this third edition of the NBCC PSG Digest with the theme Emerging Technology Trends before COVID-19 became a global pandemic and one which has changed our world in many ways.

Besides the serious health implications, COVID-19 is having a significant impact on businesses and the economy world over. The impact is being felt by all forms of businesses, large and small and all economies, developed and developing. No one is spared. Businesses, organisations and governments must respond to these impacts to ensure we emerge from it stronger.

One fact the pandemic has reinforced is the importance of emerging digital trends, such as blockchain, artificial intelligence, augmented and virtual reality, the internet of things and many others which are rapidly reshaping our world and evolving at unprecedented speed.

This third edition of PSG Digest beams light on these technologies. The aim is to highlight how technology is being used today in various sectors to create value for both the end users and the organisations offering such services.

Specifically, this edition features articles contributed by subject matter specialists and experienced professionals on blockchain, Artificial intelligence, and the Internet of things. It also captures how these technologies are transforming health care and payment services. We have also included news updates and relevant stories to make for a holistic reading experience.

The overarching message really is that we must pay attention to emerging technologies, view their effects as opportunities and begin to align our organisation's business strategies towards taking advantage of the opportunities they present.

Many thanks to all those who contributed articles to make this edition possible. I urge you to share copies of the newsletter with people within your professional network.

Thank you.

Taiwo Oyaniran

Associate Director, PwC Nigeria

Editor-in-chief



Uyi Akpata
PwC Country and Regional
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AI AND ROBOTICS WILL DEFINE NEW HEALTHCARE

Health matters!

It matters to each of us as individuals and to the society. It lies at the heart of our economic, political, social and environmental prosperity and it is one of the largest industries in the world. The global healthcare system is fundamentally changing. Advances in technology, new entrants from outside the industry and changing consumer expectations are driving a global shift in the healthcare landscape. Healthcare companies face a choice: transform to be part of the future or risk being left behind.

Artificial intelligence and robotic technologies have long been promising areas for healthcare. The explosion of healthcare data combined with the rise in demand from ageing populations around the world, rising costs, and a shortage of supply – both in the number of healthcare professionals needed to treat and care for an increasing number of sick people and the availability and access to a broader range of necessary services than ever before – has left a monumental gap that only technology can fill.

Increasing demand and increasing scarcity of health care personnel has put pressure on healthcare delivery, which is in constant need of optimization. Artificial intelligence will not completely replace physicians and care workers, but it can play a key role in reducing the pressure on healthcare systems and be a decision supporting tool for physicians.

How does this benefit the healthcare industry?

Most of us are barely aware of it, but AI is already a part of our lives – it's in our cars, telling us when it's time for the engine to be serviced based on our driving patterns; it's in our everyday Google searches and the suggestions from Amazon that follow us around on the web; it's the chatbot on the end of the telephone in call service centres. Just like in our everyday lives, AI and robotics are increasingly a part of our healthcare ecosystem.

AI and robotics are transforming healthcare in these ways:

Keeping Well: One of AI's biggest potential benefits is to help people stay healthy, so they don't need a doctor, or at least not as often. For example, **the Smart belt-well** has a built-in mechanism that alerts the person when they overeat. It relies on a magnetic sensor to track waste size and tension to determine when the users may have overeaten and alerts the wearer. These applications encourage healthier behaviour in individuals and help with the proactive management of a healthy lifestyle putting consumers in control of their health and well-being. Additionally, AI increases the ability for healthcare professionals to better understand the day-to-day patterns and needs of the people they care for, and with that understanding they can provide better feedback, guidance, and support for staying healthy.

Early Detection: AI is already being used to detect diseases, such as cancer, more accurately and in their early stages. For example, various AI applications are being developed to assist in early detection and accurate diagnosis of breast cancer. In one study AI was able to analyse mammogram results thirty times faster than doctors, and with 99% accuracy. The proliferation of consumer wearables and other medical devices combined with AI is also being applied to oversee early-stage heart disease, enabling doctors and other caregivers to better monitor and detect potentially life-threatening episodes at earlier, more treatable stages. In cases of dementia, the earliest a patient gets diagnosed with traditional methods is, usually, when they experience early cognitive changes and subjective impairment, and in many cases, after the clear onset of cognitive decline and disability.



With AI based methods, it can be possible to diagnose a patient at an earlier stage, where there are almost no clinical signs. This could be realized by using a targeted or systematic screening approach at the primary care level.

Diagnosis: It is estimated that 80% of health data is invisible to current systems because it's unstructured. IBM's **Watson for Health** uses cognitive technology to help healthcare organisations unlock vast amounts of health data and power diagnosis. Watson can review and store far more medical information – every medical journal, symptom, and case study of treatment and response around the world – exponentially faster than any human. And it does not just store data, it's capable of finding meaning in it. Unlike humans, its decisions are all evidence-based and free of cognitive biases or overconfidence, enabling rapid analysis and vastly reducing – even eliminating – misdiagnosis.

Treatment: AI can help clinicians take a more comprehensive approach for disease management, better coordinate care plans and help patients to better manage and comply with their long-term treatment programmes. **AiCure** has built an application to monitor patients with long-term conditions and help them adhere to medication intake. The application uses a visual recognition system to identify the patient's face, the medication they are taking, and confirm ingestion. The data is then sent back to the care provider or to a pharmaceutical company conducting a clinical trial.

Robots have also been used in medicine for more than 30 years. They range from simple laboratory robots to highly complex surgical robots that can either aid a human surgeon or execute operations by themselves. In addition to surgery, they are used in hospitals and labs for repetitive tasks, in rehabilitation, physical therapy and in support of those with long-term conditions.

Decision Making: Improving care requires the alignment of broad base data analysis with appropriate and timely decisions, and predictive analytics can support clinical decision making and actions as well as prioritise tasks. Using the system dynamics driven pattern recognition to identify patients at risk of developing a condition – or seeing it deteriorate due to lifestyle, environmental, genomic, or other factors – is another area where

AI is beginning to take hold in healthcare. For example, in an extension and application of AI, PwC's Bodylogical™ captures learnings in mechanistic modelling to digitally represent the physiology of the human body. This enables true-life simulations to predict the likely progression of chronic diseases in the future based on today's actions and interventions. These simulations help pharmaceutical companies, providers, payers, employers, researchers, and consumers better understand how daily life choices and therapeutics impact individual patients or population health outcomes and associated costs.

Embracing New Health

New technology is bringing innovation to old treatments as modern health systems treat and cure more diseases than ever before. How we embrace AI and robotics to complement and enhance current healthcare services over the next ten years will define our ability to deliver a more responsive health service with improved health outcomes, while at the same time enabling people to take more control over their day-to-day health needs.

Five distinct trends are converging, which mean AI and robotics will come to define New Health:

- 1 First and foremost is the **value challenge** that all countries across the globe are facing – there is escalating demand from long-term, chronic disease, rising costs, often with an ageing population and limited resources (money, workforce specialists, etc). Yet we are continuing to invest in facilities and equipment that were built to solve a completely different set of healthcare needs and are not designed to cope with this demand.
- 2 The past decade has seen an **explosion in the amount of health data** that is now available to us. Furthermore, fully 80% of this extraordinary amount of data is unstructured, meaning that it is not contained in a database or some other type of data structure. Staying current with and being able to access this data is simply beyond the scope of any human individual, no matter how capable or intelligent.
- 3 **Information technology** development in healthcare has been rapidly moving from products to services to solutions. Past decades have focused on the innovation provided by medical

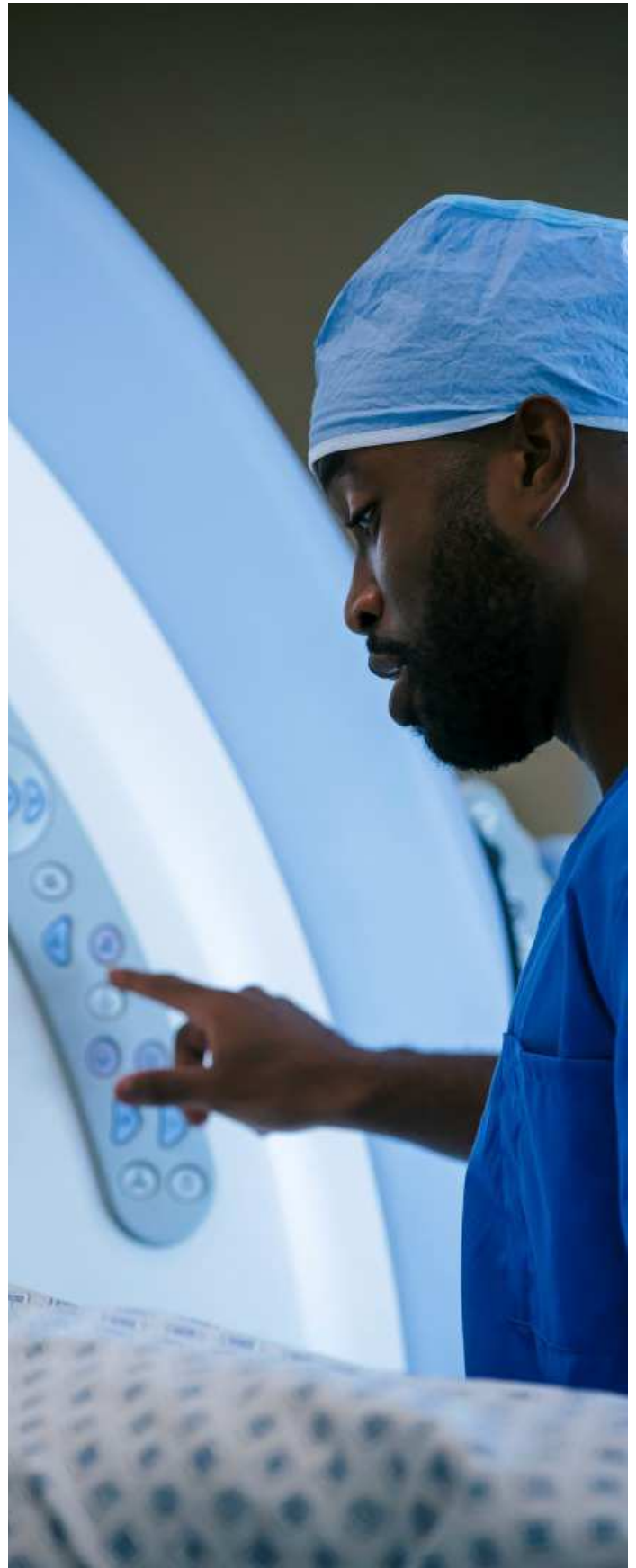
products delivering historic and evidence-based care. The next decade is moving towards medical solutions – using AI, robotics, and virtual and augmented reality – to deliver intelligent solutions for both evidence- and outcome-based health and focusing on collaborative, preventative care.

- 4 Technology has had an impact far beyond the developments in healthcare. The explosion of technology – digitally enabled, wireless connectivity across increasingly mobile devices – has created an increasing **democratisation of access for healthcare**. Some of the most powerful AI tools are already embedded in Android or iOS. Harnessing this technology is providing consumers with the data and information they need to proactively manage their own health and wellness, and to make better, more informed decisions in partnership with their healthcare providers.
- 5 Finally, the **willingness of the general public** to be more active participants in their own health and wellness has now reached critical mass and this willingness is extending into the areas of AI and robotics.

Conclusion

As these technologies develop, faster and better diagnoses, and more effective treatments, will save more lives and cure more diseases, and we will have more opportunities enabled by this technology to live healthier lives. Whether we like it or not, AI and robotics are the future of healthcare. Access to quality, affordable healthcare, and good health for everyone is the goal. The economic and social advantages to be gained from integrating AI and robotics seamlessly into our existing healthcare systems, and then create new models of healthcare based on these technologies, are enormous. Yet healthcare remains personal, and we must not lose sight of the human element. This will mean redefining the various roles of healthcare professionals and ensuring that the necessary new skills are understood and taught in our medical schools.

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Financial Technology - The Future of Payments in Nigeria

Over the years, Nigeria has taken positive steps to run a cashless economy. Recalling the pre-cashless era, customers of banks and other financial institutions had to carry cash and travel long distances to make deposits, withdrawals, and access other financial services. This was indeed cumbersome, time-consuming with significant risk exposure. The period was hallmarked by incessant bank robberies and armed attacks on individuals. With the emergence of Internet banking, these limitations have been reduced to the barest minimum.

Payment methods have been evolving since ancient times where the smart solution was the 'split tally stick' (a simple piece of wood or bone that had notches in it and kept track of things). Today, businesses and consumers have embraced technology to satisfy consumer demands and perform tasks faster and more efficiently.

The emergence of online payment platforms has indeed been a watershed in the development of financial systems all around the world. Individuals now have seamless access to their accounts and can perform various payment transactions from the comfort of their homes and offices. This development was promoted via the advances in Financial Technology, which birthed the Mobile Banking, Mobile Payments, and Mobile Apps amongst others.

Despite the notable milestones achieved thus far, the payment landscape continues to experience a wave of innovation, driven by technological advancement and consumer desire for on-demand banking and payment solutions. This has resulted in non-traditional market players challenging traditional banking as we know it. Many non-bank entities now provide payment solutions including money transfer, quick credit, utility bill payment that have become firmly established in the market.

Since the payment market had been traditionally served by Banks, these new innovative non-bank payment providers are causing disruption and driving rapid changes in the payment landscape. This situation could easily accelerate a tipping point if the incumbents do not act swiftly and decisively to position themselves competitively by offering attractive value-adding products and services to both individual and corporate customers. The question then is how best to leverage relevant technology in such a way that it further enhances customer experience. At the moment, the most popular payment systems are those that offer seamless and convenient customer experience – one of the most innovative being finger and facial recognition. By exploring user experiences that are not solely driven by technology but are instead driven by customer needs, opportunities for disruptive thinking are uncovered. The traditional banks and payment leaders must therefore make decisions today to win.

A research undertaken by Daniel Newman and published on Forbes website buttresses the foregoing:

“ today's customers do not want a pretty building. They want 24/7 access, easy-to-use (and glitch-free) apps, and as little human contact as possible. There seems to be a trend here- everything in financial services and banking is going mobile. But that also includes third-party financial service providers who are now competing with banks in the financial space. This could be unconventional lenders, financial managers, or simple financial budgeting apps. ...banks will need to consider how they integrate with these third-party services – which of the services they may be able to offer to their customers directly-eliminating the middle-man altogether.

”



As customers become increasingly frustrated by payment solutions that require enrollment, entry of payment data, or additional effort of any kind, the end-to-end commerce experience will become more important than any individual product or service solution. Customers will want all information seamlessly and instantly available when they complete a transaction, further blurring the lines between shopping, making a purchase and paying.

Unfortunately, as old problems are solved, new ones are indirectly created. The incidences of cyber-crime and internet fraud mostly targeted at financial institutions and individuals using online platforms is becoming pervasive.

However, cyber-security should be seen from “all sides of the coin. Therefore, focus should not only be placed on the potential dangers and challenges that breakthroughs in financial technology engender, but also such focus should be extended to the career possibilities which cyber security offers as top priority would be given to protecting organizations from cyberthreats and breaches. Implementing enhanced security measures to protect customers will speak directly to the increased demand for data protection, which will have positive impact on customer confidence.

In Nigeria, cash still reigns supreme as the major tool of

transaction. This is partly due to the fact that developments in technology and financial services offered by banks and financial institutions have only developed in the urban areas. Individuals who live in remote areas still deal largely in cash.

In 2018, the Central Bank of Nigeria shared its vision to achieve at least 80% financial inclusion by 2020. The goal was to engage the estimated 60 million unbanked and under-banked Nigerians by building an extensive network of 500,000 agents known as Shared Expansion Facilities (SANEF) in collaboration with Banks and select licensed mobile operators, to extend basic financial services to remote areas. It is however not surprising that the CBN has now adopted the strategy to aggressively build agent networks, as this has proven to be an effective approach to cover a largely uneducated target market. Targeting these individuals as middlemen fast tracks the process of gaining the trust of customers who have never heard of mobile money, have a mistrust for technology, and may not have access to the internet to transact on their own.

At the end of the day, a Country like Nigeria with its giant population and the attendant developmental challenges would be better managed when there is efficient and effective identity/data management systems, which will in turn assist as a scoreboard to check the progress of development and the social welfare of the citizens.

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BLOCKCHAIN - RETHINKING BUSINESS SYSTEMS

The world is changing at a breath-taking pace. Blink once, and you will have missed yet another disruption, another tech-driven innovation. What is at the heart of this revolution? Data. Lots of it.

Where oil fuelled the economy for 50 years, data now holds that position. That is where blockchain enters the picture. Think of blockchain as the key connector across this massive flow of data. Everyone is talking about blockchain, and no one wants to be left behind.

As a distributed, tamperproof ledger, a well-designed blockchain does not just cut out intermediaries, reduce costs, and increase speed and reach. It also offers greater transparency and traceability for many business processes. Blockchain capability will be critical to winning some of the most significant transformational work our clients undertake for the next ten years and will increasingly impact our business.

In less than ten years, Blockchain has emerged from a small presence to one of the most talked about technological innovations.

A transformative technology

Blockchain offers a digital solution to solve the complexities and costs of facilitating trusted, verified transactions and transfers.

Distributed Data

Technology solution designed for sharing information amongst multiple parties and therefore provides an elegant technology approach to linking networks.

Proven Security

Blockchain offers a highly secure mechanism for passing information – the security is designed and based on its roots in payments.

Proven Resilience

The technology distributes processing between multiple parties, creating resilience as there is no single point of failure.

Aids Auditability

Blockchain technology supports a highly secure immutable transaction history. There is potential to create a real time auditor or regulator mode.

Reduce Errors

Each party maintains their own shared view of the data which is constantly kept in line by the technology. This avoids costly reconciliation efforts between parties.

Foundation to Grow

By its nature, the technology provides a foundation for future extensions to more participants (new nodes) and functionality (roles).



Blockchain solutions are attractive when:

- 1 Multiple parties share data - multiple participants need views of common information
- 2 Multiple parties update data - multiple participants need to record and update information
- 3 Requirement for verification - participants need to trust that the actions that are recorded are valid
- 4 Intermediaries add complexity - removal of intermediaries can reduce cost and complexity
- 5 Interactions are time sensitive - reducing delay has business benefit
- 6 Transactions interact - Transactions created by different participants depend on each other

How blockchain is changing business

There are many indications that blockchain is fundamentally altering the business landscape. Here are just a few significant shifts:

- **Tokenisation** - the representation of real or virtual assets on a blockchain — is spreading to raw materials, finished goods, income-producing securities, membership rights and more. You can now represent on a blockchain almost everything businesses do.
- **Initial coin offerings (ICOs)** - in which a company sells a predefined number of digital tokens to the public, are funnelling billions of dollars into blockchain platforms. Increasingly an alternative to classic debt/capital funding as provided today by venture capital and private equity firms and banks, [ICOs](#) in the first five months of 2018 raised [\\$13.7 billion](#). The largest ICOs to date have been diverse and included EOS, which is focused on blockchain infrastructure; Huobi Token, a coin for a South Korean crypto exchange; and Hdac, an Internet of Things platform.
- **Enterprise software platforms** - that are the engine for company operations such as finance, human resources and customer relationship management are beginning to integrate blockchain. For example, Microsoft, Oracle, SAP, and Salesforce have all announced blockchain initiatives. In the future, many core business processes will run on — or interoperate with — blockchain-based systems. Using blockchain in concert with enterprise resource planning platforms will enable companies to streamline processes, facilitate data sharing and improve data integrity.
- **New industry and territory leaders are emerging** - Gartner has found that 82% of reported blockchain use cases were in

financial services in 2017, but that sector's portion dropped to 46% of reported use cases in 2018. Our survey respondents still perceive financial services to be the current and near-term future leader of blockchain, but also see potential in industrial products, energy and utilities and healthcare. Moreover, an early centre of gravity in the US and Europe is shifting, our survey respondents believe that the US is the most advanced territory in developing blockchain today, but that in three to five years, the leader will be China.

Barriers to blockchain adoption

The rate of adoption for an emerging technology is influenced by how well it is understood and trusted. Blockchain, by its very definition, should engender trust but companies confront trust issues at nearly every turn. For one, users must build confidence in the technology itself and as with any emerging technology, challenges and doubts exist around blockchain's reliability, speed, security, and scalability. There are also concerns regarding a lack of standardisation and the potential lack of interoperability with other blockchains.

Another factor contributing to the blockchain trust gap is a lack of understanding. Even now, many executives are unclear on what blockchain really is and how it is changing all facets of business. Although the public narrative has moved beyond bitcoin, even the more recent focus and hype around ICOs only hint at the potential impact. Blockchain's role as a dual-pronged change agent — as a new form of infrastructure and as a new way to digitise assets through tokens, including cryptocurrency — is not easy to explain. Think about other new technologies: users can try on virtual reality goggles or watch a drone take flight. But blockchain is abstract, technical, and happening behind the scenes.

Another challenge for blockchain is building trust in the network. It is perhaps ironic that a technology meant to bring consensus hits a stumbling block on the early need to design rules and standards. Take payment systems and mechanisms in banking. Though everyone plays by the rules of existing systems today, they do not necessarily agree on how an alternative blockchain-based model should be designed and operated.

Likewise, there is a lack of comfort regarding regulation. Many regulators are still coming to terms with blockchain and cryptocurrency. Many territories have begun studying and discussing the issues, particularly as they relate to financial services, but the overall regulatory environment remains unsettled.

Overcoming Barriers to blockchain adoption Four strategies for blockchain success

Blockchain's trust paradox is a significant, but not insurmountable, challenge. Here are four strategies for navigating this new world.

- **Make the blockchain business case:** Your blockchain project needs to be supported by a strategy. What is the issue you are addressing, and how will blockchain help? How might this same issue be affecting others in your industry? Make sure you know where blockchain will fit in your business environment, and fine-tune issues along the way, but stay focused on the long-term value.
- **Build an industry ecosystem:** Start with smaller ecosystems with a tradition of cooperating on matters of industry-wide importance. It is also possible to build a blockchain that starts with just a few stakeholders but is ready to expand. It is also important to conduct a competitive analysis: Are competitors or new entrants already planning on using blockchain? Is there a potential for partnership? Will you have to participate in their blockchain solution in order to continue doing business?

The key to the solution is both competitors' participation and trust — trust that the encryption and access do not expose competitively “sensitive” information. Interoperability is a key ingredient for a successful blockchain. If different participants will be entering data and transactions into the blockchain, that data must be standardised, and its governance must be robust.

- **Determine rules of engagement:** The participants of a blockchain ecosystem need to decide what the operating standards will be and what various users will be able to see and do. The design begins with the strategic business model, which includes making decisions about whether the blockchain will be “permissionless”, and thus available to everyone, or be “permissioned” (having various levels of permissions). Permissions determine participants' roles and how they will engage with the blockchain, which can vary from entering information or transactions to only viewing information processed on the blockchain. Plan to add cybersecurity, compliance, and legal and audit specialists to blockchain development teams.

The choice of model is not automatic; organisations will decide based on design and use case considerations. They will also need to consider the type of network to establish. For example, a private, or closed network

- **Navigate regulatory uncertainty:** The risks of blockchain, and how to trust it, are part of a growing public discussion of responsible innovation and trust in technology. Blockchain's potential for transparency, as well as the tamperproof record it creates, could make it a powerful tool for regulators. Given the current environment, companies should anticipate how regulators might respond to commercial activities migrating to a blockchain. You will want to keep abreast of regulatory developments and engage with lawmakers at all jurisdictional levels. Likewise, build in checkpoints that enable you to take stock of the environment and to change course if needed.





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Emerging Digital Workplace



Technology in the workplace has advanced by leaps and bounds across the globe and has allowed many forward-thinking companies right here in Nigeria to shift their operations from outdated analogy and into the dawn of the digital age. Now, with the outbreak of the COVID-19 pandemic and almost every country on a compulsory lockdown, the world has shifted to working from home.

But Wait, What is a Digital Workplace?

A digital workplace is a network of connected workplace technologies to create one, amazing, collaborative environment for employees online, whether they are working from home or not.

Over the past decade, technology in the workplace has rapidly become one of the most essential parts of running a business in any industry. Workplace tech can:

- Break down information silos and create a portal for all internal data and communication
- Increase operational efficiency
- Keep a company culturally relevant
- Deliver more precise and accurate data to help leaders make refined, strategic decisions
- Connect and align an entire organization
- Facilitate collaboration among dispersed teams and increase innovation and productivity

Who Needs a Digital Workplace?

Any business with remote workers, frontline employees, multiple locations, or any other impediment e.g. (a pandemic) to every employee being together in the same place, at the same time, every day - needs a digital workplace.

It allows employees to come together, share ideas, and bond with each other just as well (sometimes even better) than if they shared a cubicle.

To make the most of workforce management, it is important to stay on top of the latest trends and new advances in computer technology in business.

Here are five emerging workplace technologies to watch as you develop your digital workplace.

1 The Cloud: Where the Digital Workplace Lives

What exactly is “the Cloud?” Cloud computing involves access and storage of information over the internet instead of traditional local storage (on your computer’s hard drive, for example). Chances are that most of the technology you rely on today, from photo storage on your mobile device to the systems you use for work, is utilizing the Cloud.

Because of the ubiquitous nature of the Cloud, many employees end up using their own data and devices daily in both their personal and professional lives. Using personal Cloud storage for work-related information poses serious security risks.

Pro tip: Elevate your data security by aligning organizational systems in the Cloud rather than hard data drives.

2 Workforce Solutions with Digital Security in Mind

Digital security has never been more important than it is today. By 2021, cyber-attacks will cost the global economy an astounding \$6 trillion. That has doubled what it was just five years ago, and this number is expected to climb every year. Popular video conferencing app Zoom recently experienced a number of issues that attracted public attention, most notably call hijacking or “Zoom-bombing” where calls that are not set to private or password-protected can be accessed by anyone who inputs the nine- to 11-digit meeting code.

That is why it is so important to choose secure systems when implementing new communication technology in business.

3 Smart Virtual Assistants: New Communication Technology in Business

Virtual assistants are not just for executives and upper workforce management. Many employees also turn to virtual assistant company apps to increase their own productivity. In fact, Gartner predicts that by 2021, 25% of the digital workplace will incorporate digital assistants.

Virtual assistants, or VAs, can enhance a digital work environment by:

- Answering questions in real-time
- Handling operational logistics, like scheduling meetings
- Using machine-learning algorithms to compile data and enhance their own capabilities

These apps can organize your schedule, automate repetitive daily tasks, and more. There's even AI in the works that will be able to anticipate your needs to help you be more efficient.

4 New Technology in the Workplace Includes Immersive Team Apps

Video conferencing with co-workers was once an exciting development for the digital workplace, but companies now use virtual reality in more inventive ways, particularly in the manufacturing industry.

Do not be surprised if you see this kind of technology showing up in a team app within your digital workplace. Workplace VR can create immersive on-the-job training opportunities, teaching employees' new skills to help advance their careers.

Pro tip: Incorporate innovative workplace technology that can increase productivity and engagement for every employee.

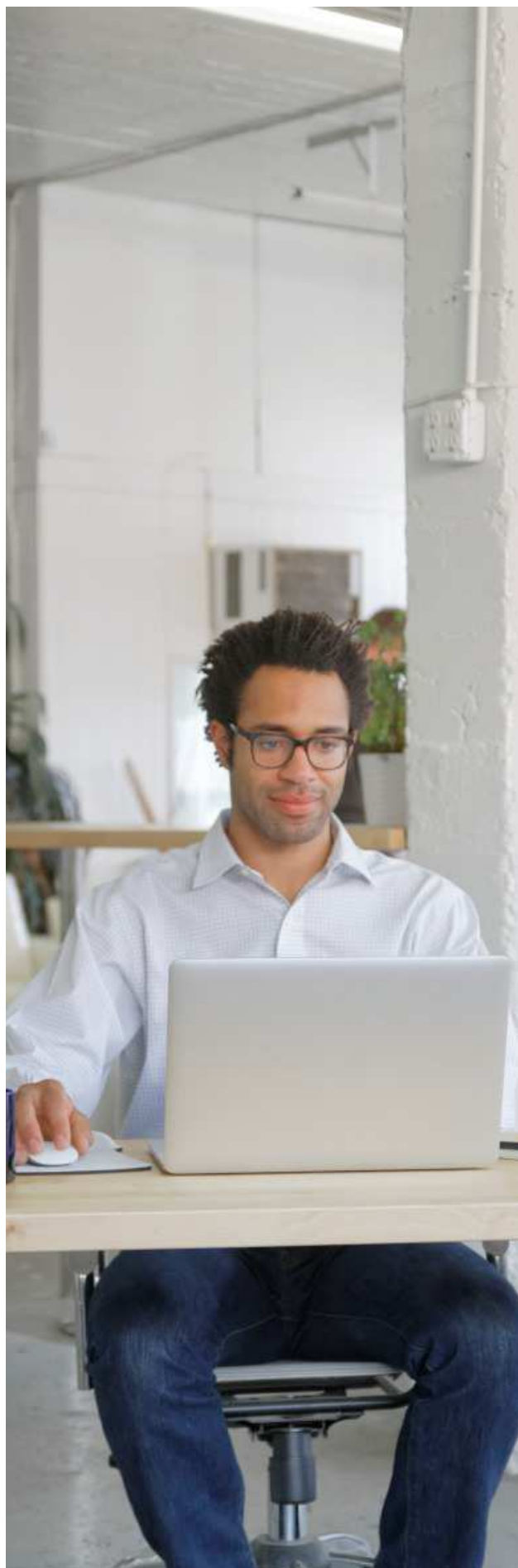
5 The Importance of Secure Group Messaging Systems

Offering employees, a full suite of digital communication tools is essential for a well-run digital workplace that enables a variety of channels of secure messaging.

Technology in the workplace, through an internal communications platform like Beekeeper, can:

- Enable real-time communication
- Keep all your employees connected through a variety of organizational and operational communication features, from group chats to 1:1 messaging
- Facilitate collaboration between employees anywhere in the world, at any time

It can be difficult to keep up with technology but doing so will transform your business. From employee productivity to IT security, your business cannot grow without utilizing these new technologies.





Faith Adarighofua
Senior Associate,
Wole Olanipekun & Co.

Member, PSG

LEGAL PARADIGM OF IDENTITY MANAGEMENT IN NIGERIA

1.0 INTRODUCTION

1.1 Identity management (IDM) describes the management of individual identities, their authentication, authorization, roles and privileges within an organization. A good identity management system provides decision makers with tools and technologies to control user access to critical information within the organization. Main functionality of Identity management system is to increase security and productivity, while decreasing the cost, downtime and repetitive tasks. These include user creation, user deletion, lock user, unlock user, grant access, and revoke access. Unique Identification for individuals across the world is difficult to implement because of privacy reasons. Thus, more than 80 countries in the world have formulated laws on protecting privacy of their citizens. An effective national identity management system is critical to the development of any economy; it provides a universal identification infrastructure for a country that enables access and means to confirm the identity of individuals residing in a country. The importance of identity management cannot be more underscored as proper economic planning, adequate intelligence gathering and functioning internal and external security architecture will be difficult to achieve in the absence of a robust national identity system (which is usually comprised in a central identity repository or database)

3.0 IDENTITY MANAGEMENT IN NIGERIA

3.1 Regulations and statutes enacted over the decade pertaining to this subject show that Nigeria has a fairly developed identity management structure. In the last decade, Nigeria has shown trends that project it as fast becoming more conscious of the right to privacy and data protection. While there still exists some lacuna in the system, thereby placing Nigeria behind her global contemporaries, it is important to highlight the relevant legal frameworks currently in place in the form of statutes, regulations, and case law.

3.2 The primary body charged with the responsibility of identity management in Nigeria is the National Identity Management Commission ("**NIMC**"), established pursuant to the **National Identity Management Commission Act**. The duties of the Commission as provided in section 5 of the Act, includes the following, to:

- Create, manage, maintain and operate the National Identity Database established under section 14 of this Act including the harmonisation and integration of existing identification databases in Government agencies and integrating them into the National Identity Database;
- carry out the registration of citizens of Nigeria into the National Identity Database;
- carry out the registration of non-citizens of Nigeria who are lawfully resident in Nigeria;





- issue a General Multi-purpose Identity Card to any person registered pursuant to paragraphs (b) and (c) of this section;
- collate information obtained by the Commission in pursuance of its functions under this Act and reproducing such information as may be required, from time to time;
- assign a unique National Identification Number to any person registered pursuant to paragraphs (b) and (c) of this section and the National Identification Number shall be incorporated into or made compatible with other existing identity related databases or registers in respect of which information or data relating to the registered person has been registered, documented or stored;
- ensure the preservation, protection, sanctity and security (including cyber-security) of any information or data collected, obtained, maintained or stored in respect of the National Identity Database inter alia.

3.3 The question of whether or not the Commission has been in absolute compliance with its functions as provided above is a question of judicial debate, especially in the area of protection of the privacy of Nigerians vis-à-vis their right to privacy, and data protection

3.4 In addition to the aforementioned provision, another instructive provision in the NIMC Act is section 14 of the Act, which provides for the establishment of a national database, as follows:

- There is hereby established a National Identity Database (in this Act; referred to as "the Database") which shall contain registered information or data relating to citizens of Nigeria and non-Nigerian citizens who are registerable persons within the meaning of section 16 of this Act.
- Any person in respect of whom an entry is made in the Database (in this Act referred to as "a registered person") shall be identified using unique and unambiguous features such as fingerprints and other biometric information.

3.5 The database prescribed by the Act creates room for a myriad of data privacy issues, including the processing of personal data, accountability, security and safeguard of personal data in the database, data quality and data subject participation. The Federal High Court, Abuja was faced with this question in the case of **Incorporated Trustees of Paradigm Initiative for Information Technology (PIIT) & Sarah Solomon-Eseh (Applicants) v. National Identity Management Commission (NIMC) & Anor**, where the court reiterated the functions of the commission, and held that the Commission had a duty to improve on data security and protection within its

organization to avoid breach of citizens' constitutional right to privacy. The decision reached by the court is instrumental in affirming the data privacy rights of Nigerian citizens. Also in the case of **Emerging Market Telecommunications Services v. Barrister Godfrey Nya Eneye (2018)** the Court of Appeal expounded on the provisions of section 37 Constitution to include data protection, when it held Per HASSAN, J.C.A at Pp. 25-29, para. C, thus:

“...it is my view that by giving those unknown persons and organizations access to the respondent's Etisalat GSM phone number to send unsolicited text messages into it, amount to violation of the respondent's right to privacy guaranteed by Section 37 of the Constitution, which includes the right to the privacy of a personal's telephone line”

3.6 Processing of data seemingly raises the largest concerns as the NIMC Act is silent on the extent of data accessibility. While it may be implied that the collection of personal information must be strictly towards the realization of the objectives of the Commission, as contained in the long title of the Act, as well as section 5 of the Act, the speculative nature of the statute creates lacunae which can be easily exploited to the detriment of citizens, who have a constitutionally guaranteed right to privacy.

3.7 The enactment of the NIMC Act is without a doubt, a step in the right direction for the growth of Identity Management in Nigeria. It is noteworthy to point out that the Act does not however address the salient issues around identity management, particularly privacy and identity theft. The many inadequacies of the Act pertaining to data privacy have been addressed by the National Data Protection Regulation, 2019 (NDPR). While the Regulation is made pursuant to another Act - (The National Information Technology Development Agency Act, 2007), it is relevant to the subject of identity management as it addresses the regulation and protection of data.

Its objectives include the following:

- to safeguard the rights of natural persons to data privacy
- to prevent manipulation of Personal Data
- to foster safe conduct for transactions involving the exchange of Personal Data

3.8 The NDPR Regulation is laudable for being all encompassing and extensive. It imposes a duty on persons involved in data processing or the control of data to develop security measures to protect such data, and prescribes penalty for default of any of its provisions. While the inclusion of the provisions of the Regulation in a statute would be commendable and a step in the right direction in protecting the constitutionally guaranteed right to privacy, the Regulation, like relevant statutes, has the full force of the law thus making it enforceable by citations, fines and other forms of discipline.

3.9 The NDPR Regulation makes provision for stringent implementation mechanisms and in July 2019, the Agency issued a Draft Implementation Framework. The Framework highlighted the issue of breach of data by service providers, contrary to the provisions of the National Data Protection Regulation (NDPR). The NDPR was rightly described by the Draft Implementation Framework as the most robust data protection framework in Nigeria, ergo, the continuous breach of the right to data privacy as highlighted by the implementation framework is not premised on the absence of frameworks, but the implementation and enforcement of the same, thus resulting in the issuance of the Draft Implementation Framework.

3.10 The Draft Framework includes comprehensive, sequential procedures for the enforcement and implementation of the National Data Protection Regulation, making provisions for administrative sanctions as well as criminal prosecution. In anticipating the final document, the Draft Framework is a progressive step in resolving the issues of breach of data privacy rights, particularly by service providers which has been a challenge in recent time.

4.0 JUXTAPOSING THE IDENTITY MANAGEMENT REGIME IN NIGERIA WITH OTHER JURISDICTIONS

4.1 Identity Management is an issue that cuts across all jurisdictions, evidenced by an increase in online data, data processing and transactions globally, therefore, many sovereign states have enacted Identity Management laws and regulations, and created agencies to oversee the implementation of such laws. In juxtaposing the frameworks obtainable in Nigeria as discussed above, as well as the implementation of the same with other jurisdictions, notably, the United States of America and the United Kingdom, it is clear that Nigeria is lagging behind her global contemporaries, in the area of putting in place mechanisms to serve as a deterrent for erring service providers and agencies.

4.2 The United Kingdom, like Nigeria, has a Data Protection Regulation regime known as the Data Protection Act adopted from the European Union General Data Protection Regulation (GDPR). The GDPR Regulation applies to all European Countries, which are a part of the European Union, and has been described as the most important change in data privacy regulation in 20 years. The European Union GDPR was adopted in the United Kingdom as the Data Protection Act, 2018. The GDPR Regulation is commendable for numerous reasons, noteworthy is the increase in territorial scope, and the regulation applies to organizations processing personal data of subjects residing in the European Union, and the location of such organizations is immaterial. Furthermore, the Regulation makes provisions for heavy fines, up to 20 Million for the violation of the provisions of the Regulation. Similarly, the Regulation imposes a stringent duty on data processors and service providers to notify their customers

without undue delay of breach or likelihood of the same. Finally, the regulation provides customers with the right to have personal data erased, known as the “right to be forgotten”.

4.3 Another relevant framework in the United Kingdom is [The Network and Information Systems Regulations 2018](#) like the Data Protection Act; it is an adoption of a European Union Regulation- [NIS Directive \(Directive on security of network and information systems\)](#). The Regulations apply to [OES \(operators of essential services\)](#) in the UK's energy, transport, health, water and digital infrastructure sectors; and [DSPs \(digital service providers\)](#), which are divided into three groups: online search engines, online marketplaces and Cloud computing services, and imposes financial penalties up to £17,000,000 for the violation of the provisions of the Regulation.

4.4 The United States of America, unlike Nigeria and the United Kingdom as examined above, has no single principal data protection legislation but there exists a plethora of laws at both the federal and state levels enacted to protect personal data of residents of the various States within the United States. We note that the United States of America is home to some of the most advanced technology and data companies in the world, and the absence of a uniform federal legislative framework is alarming, noting with concern an increase in data breach in the Country. States such as California have attempted to address this void by adopting the [California Consumer Privacy Act \(CCPA\)](#), the Act draws inspiration from [the European Union's General Data Protection Regulation \(GDPR\)](#), it however takes a broader view than the GDPR of [what constitutes private data, and allows consumers to sue](#)

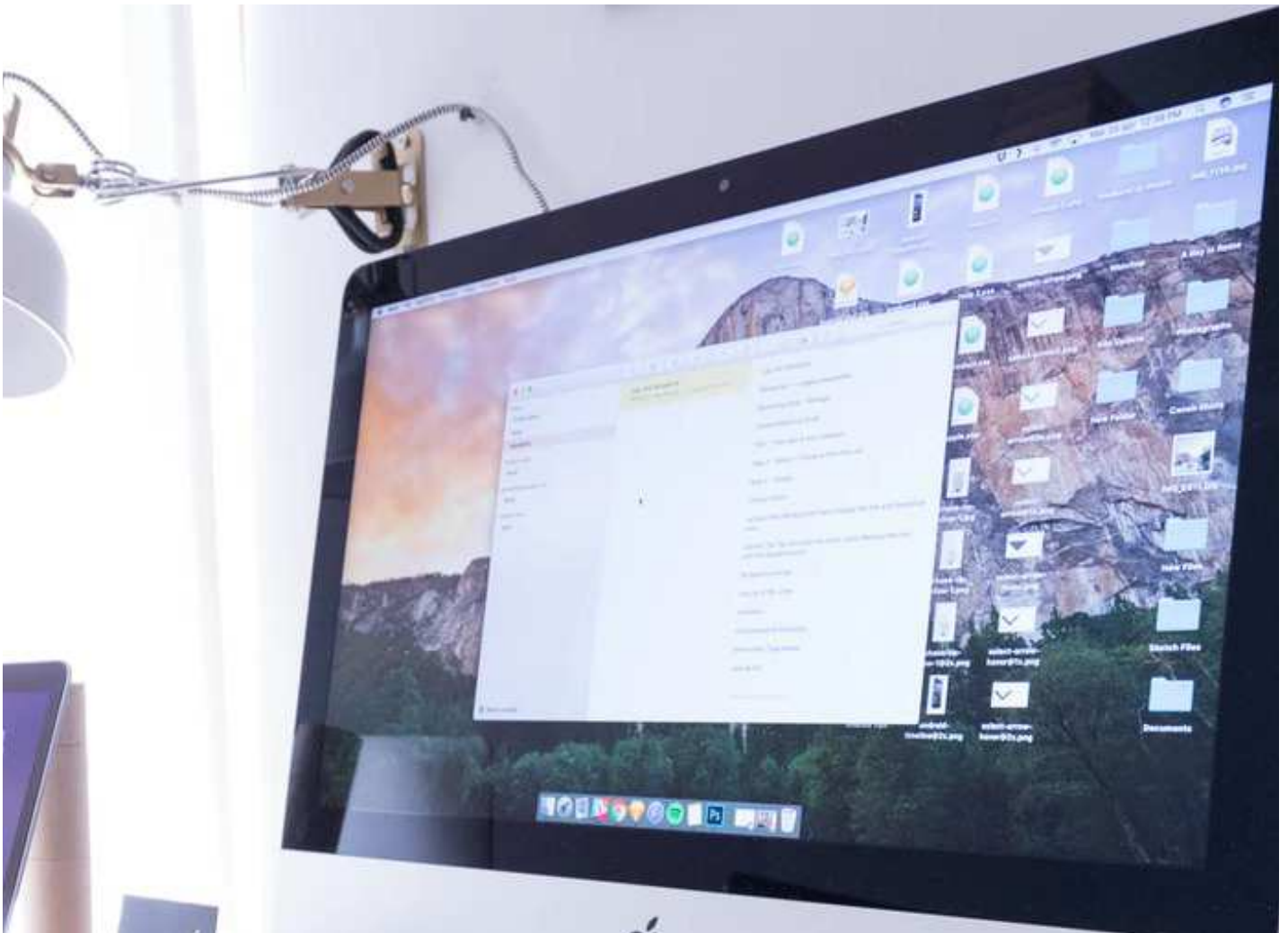
[when the privacy guidelines have been violated, even where there is no breach. In spite of the absence of a uniform federal law, the implementation of the available laws against organizations guilty of non-compliance is apparent and noteworthy.](#)

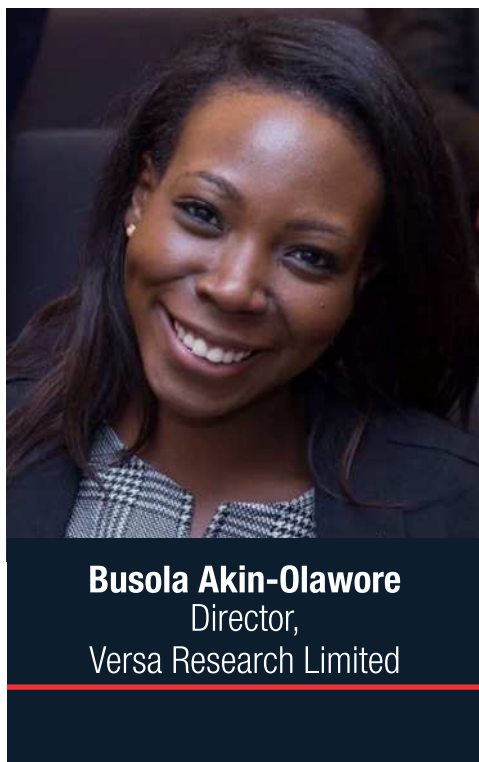
5.0 CONCLUSION

5.1 The evolving framework of Identity and data management in Nigeria is commendable. This has led to an increased consciousness on the part of citizens on their data privacy rights. The Courts have also played a major role in interpreting the provisions of these regulations to the end of ensuring that there is compliance and limited abuse. While the available instruments are laudable, particularly the National Data Protection Regulation 2019, the implementation of such frameworks can be better improved upon, and it is expected that the final document of the Draft Implementation Framework will lay to rest the seemingly insurmountable issue. We recommend that the Nigerian legislature and policy makers take the cue from other jurisdictions, particularly the United Kingdom, whose frameworks reflects the modern position of data protection, to draft and formulate composite legislation/policy on identity management vis-à-vis data protection. At the end of the day, a Country like Nigeria with its giant population and the attendant developmental challenges would be better managed when there is efficient and effective identity/data management systems in Nigeria, which will in turn assist as a scoreboard to check the progress of development and the social welfare of the citizens.



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Nigeria's E-Commerce Space: Booming or Dooming?



“In 2018, e-commerce revenue in Nigeria was over \$12 billion and is expected to reach \$75 billion by 2025¹”

E-commerce is the use of the Internet to purchase goods and services online. Nigeria is ranked second (behind Mauritius) of African countries with the highest revenue from e-commerce – in 2019, over \$56 million² in funding was raised by e-commerce companies in Nigeria.

Jumia, an e-commerce company founded in Nigeria, was valued at \$1 billion in 2016. By April 2019, the company was listed on the New York Stock Exchange (NYSE) at a \$1.1 billion valuation. Konga, another Nigerian e-commerce company was acquired by Zinox Group for an estimated \$10 Million. And in 2019, Jiji, a Nigerian marketplace company purchased OLX, a South African marketplace company, for an undisclosed amount³.

So what exactly is driving this growth?

The e-commerce sector is mostly driven by the increasing population of youth (which represents about 40% of the Nigerian population⁴), a rising middle class with changing preferences and, in some cases, increased disposable income. Consequently, we are seeing a rise in internet penetration (which was at 56% as of 2019)⁵ as well as smartphone penetration (which was at 36% as of 2018)⁶.

E-commerce in Nigeria makes it easier and faster for people to purchase goods and services without the limitations of brick and mortar stores. Regardless of geographic limitations, Nigerians can shop 24/7 choosing from a large range of products and services which in some cases can be found online at a lower cost.

The outbreak of the COVID-19 pandemic this year occasioned lockdowns, curfews and social distancing rules – all of which bolstered the e-commerce industry in Nigeria. As a result of restrictions on movement and crowds, as well as fear of contamination, many people were forced to avoid brick and mortar stores and opted for e-commerce platforms.

Compared to 2019, it is expected that the industry will enjoy huge gains in revenue by the end of the year, nevertheless, e-commerce still has a way to go before it reaches its peak in Nigeria. There are still many challenges the industry faces that pose a risk to increased adoption:

- A prevalent lack of trust in online shopping, as many people are not certain they will be receiving what they ordered. Furthermore, a (perceived or true) lack of consumer protection, in the event that the purchased product is damaged, fake or previously used.
- Many Nigerians live in areas that have underdeveloped road systems and inadequate address systems, which makes logistics and transportation very difficult and slow.
- There are still over 40 million adult Nigerians without a bank account, which is a constraint to the adoption of e-commerce as they cannot partake in digital payments.
- E-commerce platforms are prone to cyber attacks and require major investments in information security to ensure the products, services, and data of customers are kept safe.

In order to leverage momentum and increase growth in the industry, e-commerce companies need to implement systems to guarantee the protection of their customers, which will increase trust and confidence. With improved logistics and transportation within Nigeria, as well as access to neighbouring markets (particularly with the African Continental Free Trade Agreement signed), we expect to see a lot of activity within the e-commerce space with increased revenue, as well as increased investments in the industry.

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NBCC Events in Pictures



March 2020 NBCC Breakfast Meeting Event



January 2020 NBCC Economic Outlook Event



January 2020 NBCC Economic Outlook Event



January 2020 NBCC Economic Outlook Event



March 2020 NBCC Breakfast Meeting Event



January 2020 NBCC Economic Outlook Event



March 2020 NBCC Breakfast Meeting Event



January 2020 NBCC Economic Outlook Event



January 2020 NBCC Economic Outlook Event



January 2020 NBCC Economic Outlook Event



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February 2020 NBCC Breakfast Meeting Event

NBCC Events in Pictures



February 2020 NBCC Breakfast Meeting Event



March 2020 NBCC Breakfast Meeting Event



January 2020 NBCC Economic Outlook Event



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The Nigerian-British Chamber of Commerce is the foremost bilateral Chamber in Nigeria with the objective to promote trade and Investment between Nigeria and Britain since its establishment in 1977. We are affiliated with the British Chambers of Commerce (BCC) which gives us access to a network of 52 chambers of commerce across the UK and 10 international affiliations.

The Chamber was set up to promote and develop Anglo-Nigeria trade relations, continually create value for its members and facilitate business-to-business relationships. The Chamber also promotes Nigerian export to the United Kingdom (UK) and inflow of Capital and Investment into Nigeria. Services also include the organization of trade missions to the two countries, management of trainings, conferences, and seminars addressed by leading authorities in different fields. We are constantly developing network of local branches in other parts of the country and has an NBCC-UK office presence.



Vision

To be the foremost channel of trade and commerce between Nigeria and Britain



Mission

To continually encourage & promote mutually beneficial trade relations between Nigeria and Britain.

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