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Competitive Intelligence in the Age of Digital Transformation: Challenges and Opportunities: A Nigerian Perspective

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Abstract
This study analyses the impact of digital tools such as Artificial Intelligence (AI) and Big Data on the activities of Nigerian companies. This process is called Competitive Intelligence (CI). The study also finds that though these tools offer great opportunities, there is an "Intelligence Paradox" in Nigeria. It indicates that firms have a lot of data at hand but tend to grapple with leveraging it into proper business advice. This is largely caused by bad infrastructure like poor power supply and expensive internet, plus new privacy laws, including the Nigeria Data Protection Act (NDPA) 2023. To tackle these problems, the research recommends low-cost methods such as Open-Source Intelligence (OSINT) the use of free, public information, while ensuring humans are in charge of machines' work. To succeed in business in Nigeria, Nigerian firms must develop their own "Compliant Intelligence" using smart technologies that are compliant with the law, the paper concludes. Mixing global technology with local knowledge helps businesses stay ahead in a tough economy.

Keywords: Competitive Intelligence, Digital Transformation, Data Privacy Laws, Market Agility, Artificial Intelligence

I. Introduction

Competitive Intelligence (CI) refers to the ability of an organization to 'sense, interpret and respond' to the changing external environment. At the most basic level. In the pre-digital world, people took intelligence by hand for most of the time or simply inferred from anecdotal evidence. Competition today is not just a race to offer a better product or service, but also a race to get better intelligence faster. When one understands digital technology and its impact, CI (competitive intelligence) is not simply data, it is digital assets which after digital transformation are weapons for market survival and domination. Competitive intelligence (CI) has shifted from being a tactical side function to the nerve centre of corporate strategy.

The global landscape of CI has been fundamentally altered by the rapid adoption of disruptive technologies. Digital transformation (for example, AI, Cloud, Big Data Analytics) is shifting from descriptive reports to real-time predictive modelling, Zhang et al. (2024). Firms that manage their digital ecosystems as a core strategy will achieve a higher sustainable competitive advantage by predicting their competitors' moves before these events occur. This worldwide phenomenon is being tested. The article by Hossain et al. (2026) on marketing analytics indicates that marketing analytics has become a necessity in the current 21st century.

The transition from traditional competitive intelligence to digital competitive intelligence is a significant journey that an organisation must undertake to deal with rapid technology innovations and changing market needs and expectations. Nigeria is faced with an extreme friction in the national system due to technology misalignment. Moreover, the growing fintech and telecoms industry is at odds with other sectors. Nigerian SMEs are now employing digital technology for market sensing as a new phase has ushered in movement from conventional to digital 1T-based market sensing.

Nonetheless, the conceptual scope of Nigerian SMEs is still digital marketing (Olaleye, 2026). Breakdown of the above digital divide has brought about market sensing industry and analytical capacity gap. In addition, erratic physical infrastructure within the Nigerian business hampers the growth of 11_based analytical tools and strategies.

II. Statement of the Problem

The present study investigates that the one of the problems confronting Nigerian firms is that increasing volumes of digital data are owned but effectively generated intelligence does not lead to better strategic decision making. Almost all executives of multinational corporations now use predictive analytics and machine learning to identify disruptive market trends with almost flawless

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precision (Zhang et al., 2024; Kornevs et al., 2026). Conversely, a majority of firms in Nigeria operate in the realm of "gut-feeling" decision-making owing to absence of structured digital CI frameworks, low level internal technology capability to high velocity data (Adeosun et al., 2021).

Currently, the NDPA 2023 is the most recent domestic hurdle faced by companies in Nigeria. The Act is a necessary condition for digital trust and a welcome initiative, but it also sets up complex compliance hurdles for firms who want to scrape and analyse digital market data (Okorie and Bello, 2024; Yusuf, 2025). Technologies such as web scraping, web crawling, RPA, and power automating require higher-level authorizations from the firms to collect authorized and unauthorized data from websites. Consequently, we observe a confrontation between global digital development trends such as market sensing and data privacy (Okorie and Bello 2024). There are no empirical research works that connect this worldwide reality for Nigerian firms to their infrastructure realities.

III. Research Objectives

1. To examine the impact of AI and Big Data analytics on the efficiency of CI gathering within the Nigerian business ecosystem.
2. To identify the infrastructural and regulatory (NDPA) challenges hindering the seamless integration of digital CI in Nigeria.
3. To evaluate the strategic opportunities digital transformation offers for enhancing market agility and firm performance in Nigeria.

IV. Research Questions

1. How do AI and Big Data technologies redefine the CI process for firms operating in Nigeria?
2. What are the primary infrastructural and legal barriers to digital CI adoption in Nigeria?
3. In what ways can digital CI drive market agility and competitive advantage for Nigerian organizations?

V. Literature Review

5.1 The Impact of AI and Big Data on CI Efficiency

In spite of the fact that globalization entails openness to all, yet it is not so. As an illustration, it is evident in the contest of AI and space between India, China and the USA. India cannot turn its back on China to produce its own armaments. As missions to space become a global affair, NASA and ISRO now share data technology. Besides, SpaceX is closely monitored by China. In the global corporate world, there has been an explosion in the corporate arsenals of adversaries from Defence to Banking & Tech. There is a major rise in competitive intelligence efforts in all sectors. The business ecosystem is far more complex and dynamic than it was one or two decades ago. While companies have traditionally dealt with a limited number of suppliers, customers, and markets, these companies now have a plethora of choices. The pace of change is not only huge but offers a strategic twist also. This turn of events impacts the design and functioning of competitive sensing and analysis capabilities. In the past, competitive sensing was a human endeavour and methodology intensive process. It did not decode competitor movements completely and cost-effectively. As a result of this, companies and countries had to decide on developing intelligence on the micro or macro levels.

In other words, the human manager of the future is going to spend less time performing queries and building reports and more time thinking through the implications of the analysis the machine generates. As per the study of Hossain Nadeem and Rashid in 2026, marketing analytics is becoming the architectural backbone of modern market orientation. It helps the firms in instant reaction to consumer sentiment. This means staying relevant to the customer now depends on owning a 'digital stethoscope' that can monitor the heartbeat of the market.

One can visibly observe this in Nigeria's digital first service sector in the business environment. According to Olaleye (2026), SME's in Nigeria that use digital marketing analytics grow much faster because they can sense micro-trends in Nigeria. According to the indigenous entrepreneur, data is a great leveller; a small business can now beat a giant if it has better data. At the local market level, Adedoyin (2026) states that Nigerian retailers are deploying Big Data to optimize the supply chain that responds to erratic consumer demand patterns. That is to say, wastage is lesser than before and profits are greater than before, business owners are now able to forecast what will sell before the customer comes through the door. E-commerce firms have also become forced to digitally sense the market in real-time, Onuwaje and Onuwaje (2026). Visibility is everything in the virtual world;, if you cannot see, you are dead! Ismaila et al. (2025) report that the use of digital CI tools increases the capability of organization in Nigeria's volatile

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macro-economic environment to strengthen their economic resilience. They call these digital instruments a digital shield which protect a company from a competitive attack or jolt. In other words, in an unstable economy like ours, digital intelligence is not an option but a survival kit for the business that shields it from abrupt shocks in the market.

Based on the foregoing evidence synthesis above, it is clear that the marriage of AI and CI is not just a technological upgrade; it is a redefinition of business "sight." The global literature focuses on the tools' mathematical speed, while the Nigerian experience presents them as resilience tools for democratized competition. What this means is that while the machine can give you the "what" (the data), the Nigerian manager must give the "why" (the context). Consequently, Nigeria's digital CI is most optimally efficient when an organization combines a high-speed international algorithm with a profound knowledge of the African consumer. If that does not happen, the technology will be like an engine without a driver.

5.2 Infrastructural and Regulatory Challenges

The problem of "Dual-Barrier System" in the sense of digital CI integration is emerging in Nigeria The barrier is caused by lack of physical infrastructure and new legal regulatory bottlenecks. As per a recent report by Adeosun et al. (2024), the supply glitches causing outages of electric power and the cost of diesel to run costly generators are the two biggest operational bottlenecks to data intensive firms. In other words, the size of your AI brain does not matter if electric power keeps blowing out. A dead server cannot provide a live feed or serve as a real-time intelligence centre. Internet Services Did Not Penetrate Poorly Because of High Cost of Broadband. As a result of Internet penetration in Lagos, Bakare (2026) explains that it is almost impossible for firms to monitor competitively events all over the country in real time because of the "digital divide" in rural Nigeria. In simpler terms, the "eyes" of our digital intelligence are half shut. Sure, we can keep track of what is happening in the mega cities, but the trends in the hinterlands are still beyond our view. In addition, Olaleye (2026) claims that the absence of local hosting centers in Nigeria forces companies to resort to costly offshore cloud services, incurring a heavy foreign exchange cost and a processing latency.

According to the local players, in particular SME's, it cannot be simply done due to expensive price tag, we are 'renting' that intelligence from overseas.

Legally, the NDPA 2023 introduced a 'compliance cost', which is probably greater than the physical cost of infrastructure. Most notably, the requirement in section 24 of the Act for fair and transparent processing conflicts directly with the 'stealthy' nature of competitive intelligence (Yusuf, 2025). The age of secrecy is finished. If you're monitoring your competition's customers, you need to have a legitimate or legal reason for doing so, and the law expects you to know what it is. The scarce and costly access to the technical expertise required to carry out these assessments in Nigeria is also the case of section 28 that requires Data Protection Impact Assessment (DPIA) for high risk processing (Okorie and Bello 2024) such as automated profiling. Being smart & legal at the same time is now a luxury reserved only for the richest companies. Akanle (2024) and Ibrahim et al., (2026) make a valid point in Section 39 on the Right to Object. This allows the data subject to choose not to participate in the automated profiling in which CI relies. In other words, the more individuals opting to say "NO", the more "leak" your data and becomes inaccurate.

Nigeria is a tough place to do business because these two problems Infrastructure and Regulation are hitting the business from both sides of the street. Though you may hardly get the power to run your servers, or afford the cost for data to accrue intelligence, you will find it even more challenging to prove possession legally NDPA 2023. Nigerian managers at the moment find themselves in something like a "strategic pincer" where they are facing and fuelling the high prices to keep their servers on while they simultaneo. The process usually involved taming mountains of paperwork to prove they were compliant. A business needs to be "resilient" on its infrastructure (i.e. go solar or local) and "transparent" on its regulation (i.e. train all, build trust with data subjects) to win the game. Only those who can solve the puzzle of fighting fire with fire the need for speed data and the reality of high-cost and high-regulation can ride the "Opportunity".

5.3 Strategic Opportunities and Market Agility

The adoption of digital corporate identity (CI) by Nigerian firms endows the firms with the 'dynamic capabilities' to survive and thrive in a VUCA (volatility, uncertainty, complexity and ambiguity) world (Zhang et al. 2024). A nimble organisation is one that is likely to survive. Zhang and co-authors (2024) also outline that the most important resource of today's organisations is digital agility. To be agile means that your business can

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change direction the moment the evidence suggests the market is heading in that direction. Abiodun et al. (2024) emphasized that the same logic applies in the Nigerian context. The study found that CI mature firms had 40% quicker market reaction times. In other words, in the Nigerian market, "the slow eats the fast". If your business has digital intelligence, you can grab the opportunity up to 40 percent faster than the non-digital firm. The banking industry places extreme importance on this agility, as confirmed by Chukwuma (2025). The digital transformation of Nigerian banks allows for real-time adjustments to credit offerings through competitive sensing. This is revolutionary; it implies that a bank does not have to wait weeks to launch a new product. Rather, they can actually see what the other banks are doing and in a matter of seconds, adjust their interest rates or loans. As per Springer (2024), the impact of digital CI on the business and as a weapon is stronger when the competitive strategy/market performance of a firm depends on digital CI being the primary management response/feedback loop. In essence, continuous intelligence (CI) is no longer a "report" on a desk, it is a GPS that tells the CEO which way to steer the company each and every day.

Interactive technologies' opportunities offer competitive intelligence professionals in Nigeria augmented human capabilities. These include Artificial Intelligence, Virtual Reality, among others. The trending of competitive sensing opportunities due to the data democratization and emergence of new technologies is discussed Silva (2025) has a positive outlook on the capability of "true blockchain technology" to provide us with "Information Veracity" that will help us differentiate authentic market signals from industrial deception in firms in Nigeria. Since "fake news" or rumour can do a lot of damage to a business in Nigeria, blockchain gives us an excellent "truth filter". In other words, what that means is that the manager will not make a costly mistake based on a lie. Similarly, Mobili (2025) argues that rebranding second-generation Open-Source Intelligence (OSINT) which refers to the legal collection and analysis of data gathered from publicly available sources such as social media, government records, and website footprints allows firms to bypass expensive proprietary databases and gather high-quality intelligence from social platforms. In simple terms, OSINT is the art of being a "digital detective"; it allows a business to predict a competitor's plans by simply connecting the dots of information that are already available to the public for free. This is great news for SMEs; it means you do not need a billion naira budget to get world-class information, you just need to know how to listen to the digital conversations on social media.

Moreover, in his analysis of digital intelligence exchange, Airlangga (2024) mentions the importance of "trust". That is, high-level Nigerian managers will only use your digital CI tool when they trust it will be safe. Trust is a foundational element in any successful professional relationship. According to Innocenti (2025), the shift to "digital intelligence" in a service-oriented sector offers organisations a locus for "continuous innovation" and helps Nigerian organisations keep pace with their global competitors by informing them of what is happening outside their company and mating that with what is happening inside their company.

A strategic opportunity for Nigerian firms is to switch from a "reactive" mindset to a "proactive" mindset. In my view, the real power of a digital transformation is not that you have the data, it is that you have the courage to use it. The virtual debate surrounding blockchain, OSINT and other similar stuff gives you the clarity. But the Nigerian manager has to provide the strategic execution. In the unstable volatile Nigerian economy, market agility is the only real insurance policy against failure. In the event that a firm is able to ally the "truth telling" power of digital stuff with the deep deepstreet smart hyena pythonesque intuition to the Nigerian business man they create a competitive advantage that will be difficult to beat. Ultimately, the opportunity is not just to become "digital", but to become "smarter" and "faster" than the challenges that the environment brings.

VI. Methodology

The methodology of this study follows a Systematic Literature Review (SLR) approach, strictly adhering to the PRISMA 2020 (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. The goal was to ensure a comprehensive, unbiased, and reproducible synthesis of the intersection between Competitive Intelligence (CI) and Digital Transformation within the Nigerian business ecosystem.

6.1 Search Strategy and Data Sources

Electronic searches were conducted across four primary databases: Scopus, Web of Science, Google Scholar, and AJOL (African Journals Online) to capture both global technological trends and specific local context. The search was limited to peer-reviewed articles, conference proceedings, and official legal documents (e.g., NDPA 2023) published between 2015 and 2026.

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Table 1: Search Strategy and Documentation

Database	Search String (Exact Verbatim)	Filters Applied	Records Retrieved
Scopus	("Competitive Intelligence" OR "CI") AND ("Digital Transformation" OR "AI" OR "Big Data") AND "Nigeria"	2015-2026, English	42
Google Scholar	"Competitive Intelligence" Nigeria "Digital Transformation" "NDPA" "AI"	Last 10 years	125
Web of Science	TS=("Competitive Intelligence" AND "Digital Transformation" AND "Nigeria")	2015-2026, English	28
AJOL	"Competitive Intelligence" AND "Digital Transformation" AND "Nigeria"	None	15

6.2 Inclusion and Exclusion Criteria

Articles were included if they met three criteria: (1) Focused on CI or market sensing; (2) Explored digital transformation tools (AI, Big Data, Blockchain); and (3) Discussed the Nigerian or African emerging market context. Non-English papers, duplicate studies, and editorials lacking empirical or rigorous conceptual backingwere neglected.

6.3 Data Extraction and Synthesis

A Thematic Synthesis Matrix was employed to categorize findings. This allowed for the identification of recurring patterns across the 22+ core references, leading to the three thematic pillars discussed: AI/Big Data Impact, Regulatory/Infrastructural Barriers, and Strategic Agility.

Table 2: Synthesis Matrix of Core References

Reference	Theme 1: AI & CI Impact	Theme 2: NDPA & Infrastructure	Theme 3: Agility & OSINT
Zhang et al. (2024)	X		X
Yusuf (2025)		X	
Olaleye (2026)	X	X	
Silva (2025)			X
Okorie & Bello (2024)		X	
Mobili (2025)			X
Adeosun et al. (2024)		X	
Abiodun et al. (2024)			X

VII. Discussions

In the Nigerian business scene, “Intelligence Paradox” is normal. As a result of AI and Big Data, it is a lot quicker to get information. But its real value is normally lost due to “everyday” issues. In most areas of the globe, the adoption of digital tools is a seamless transition. In Nigeria, high costs and poor infrastructure make this struggle a constant one. According to the research, AI will profile a competitor in a matter of minutes (Teixeira et al., 2024). However, the high price of electricity and internet makes running these tools too expensive (Adeosun et al., 2024). As a result, numerous Nigerian companies are utilizing "OSINT" (free public information) to effectively compete without incurring huge expenses on databases.

An additional significant issue is the Compliance Chill which has been caused by the NDPA 2023. Previously, businesses had the freedom to track competitors and customers without consequence. Companies need to be increasingly transparent and fair when it comes to data collection according to the said law (Yusuf, 2025). As a result, a “trap” of sorts is created for managers so that if they use the high-tech tools to track the market too aggressively, they will pay huge fines to the government (Okorie & Bello, 2024). According to the study, the time when companies would leave everything to a computer program has gone. What’s needed instead is a “human-in-the-loop" or a real human who checks the tech is following the rules and respecting people’s privacy (Ibrahim et al., 2026).

Ultimately, the implication of the research is that the Nigerian firms that will succeed most are those that can “sense” market changes and act with speed. A company doesn't have to invest in the

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costliest technology to win in an uncertain economy. According to Silva (2025) and Mobili (2025), they must use Blockchain and public data, as low-cost smart tools, to ensure that the information is real and updated. Nigerian companies today must build "Compliant Intelligence" so that they, while optimally using the latest digital techniques, do not break the law while preserving the nation's culture. Ultimately, the real "resource" of a company is perhaps not the machine but the capability of the manager to leverage data to make better and faster decisions.

VIII. Conclusion

The link between digital tools and market intelligence in Nigeria offers both great opportunities and big challenges. This study concludes that there is an "Intelligence Paradox": companies have a lot of digital data, but they often struggle to turn it into useful advice. While moving toward AI has changed how businesses work, this progress is limited by poor infrastructure and strict laws. The findings show that even though smart tools can make a company faster, they only work if the business can handle bad power supplies and follow the strict rules of the Nigeria Data Protection Act (NDPA) 2023.

This shows that staying ahead requires sensing digital changes quickly. Under NDPA rules, firms must use "Compliant Intelligence" acting fast while strictly following the law. Digital transformation is a strategic shift, not just new software. To survive, companies must mix global technology with local knowledge. This ensures they remain technologically advanced and legally safe in the modern digital market.

IX. Recommendations

Based on the synthesis of research findings, the following actions are recommended:

1. Use DPIA as regular rule. This assists them in ensuring the compliance of their digital tools with the NDPA 2023 law.
2. Keep Humans Involved: Managers should not rely completely on computers. A Human-in-the-Loop strategy would see a real person with local knowledge checking the certainty of stills as AI collects data. The computer will not overlook any important local information.
3. Use low-cost tools. Companies can save on electricity and data by using free public information (OSINT) and truth-checking tools like Blockchain. It ensures correct information at low cost without an expensive management system.
4. A tax break or financial assistance should be provided to small businesses by government agencies, NITDA and NDPC. Support should be given to businesses that follow laws on data integrity when risky new digital ideas are tried out.
5. Nigeria's schools and training centers need to refresh what they teach. Students should be taught to combine data science, business planning and, Nigerian law into one skill set.

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