ABSTRACT This study appraised the impact of data pool on innovation capability of Aquila Technology in the Operations of Petroleum Equalization Fund (Management) Board [PEF(M)B], Nigeria. Factors bothering on positive impacts made by data gathered using the Aquila Technology Platform in relation to the efficiency of tasks performed by the Operations Department of PEF(M)B were studied. The Narrative-Textual Case Study (NTCS) in amalgam with a tailor-made questionnaire and interview, administered on 140 and 30 interviewee respectively on randomly sampled population of about 198. However, one hundred and fifteen (115) of the tool representing about 82.5% retrieval ratio was recorded. The survey revealed 50.69% and 49.31% intensely agreed and agreed respectively that Aquila was designed using the Work Breakdown Structures (WBS) of Operations Department (OPs). Another 53.92% and about 80% strongly agreed respectively that the technology captured every data on all transactions which has transformed the payment process significantly. An overwhelming 70.05% and 36.61% also subscribed that data management has effectively helped the OPs Department in planning. The result of gap analysis indicated Aquila has met stakeholders expectations gaining 80% support and recording about 70% success. Another 52% observed that the pre-Aquila era was manned by fraudulent transactions. The paper submitted the need for immediate commissioning of the proposed project Aquila II.

Keywords: Innovation, Data, Aquila, Technology, Petroleum, Oil and Gas, Marketers, PEF(M)B

1. Introduction

Oil exploration in Nigeria began in 1908 when a German Company, Nigeria Bitumen Corporation was licensed to explore at Araromi area of Western Nigeria. Operations was truncated few years after the discovery due to First World War in 1914. Apparently, due to the interruption in operations, Anne, et al., (2015) claimed the discovery was now made in 1956 at Oloibiri, Niger Delta. Over time, however, the sector has emerged as extremely competitive. About 15 years after the expansion of exploration privileges, PEF(M)B (2013) observed most petrol service stations nationwide were characterized by long queues due to frequent severe shortages of petroleum products. In response to the yawning of Nigerians (The Equaliser, 2011b), the government set up an inter-ministerial committee to examine the situation and make appropriate recommendations. The impregnated recommendations gave birth to Uniform Pricing System (UPS) which steered the establishment of PEF(M)B through Decree No. 9 of 1975 (as amended by Decree No. 32 of 1989). The Board was charged with the responsibility of reimbursing
oil and gas companies for losses suffered as a result of sale of petroleum products at uniform prices throughout Nigeria [PEF(M)B, 2013]. Towards the actualization of aforementioned mandates, as at December, 2011, PEF(M)B recognized the need to shift the paradigm of claims payment from manual data collection to generating a pool of data on petroleum marketers using the Aquila Technology Platform for the purpose of innovating the payment process. This made the Board unveil the Aquila Technology in December, 2011 (The Equaliser, 2011b).

Aquila, a Latin name for Eagle was chosen in view of the bird’s strength, speed and accuracy. To successfully couple a set of the hardware, equipment required include; Radio Frequency Identification (RFID) Tags for Trucks, RFID Reader and CN3 Mobile Device. Aquila is not a tracking device to monitor movement of trucks or goods in transit, but it had scrutinized payments that were due for about 30,000 different petroleum marketers within its database as part of bridging claims for distribution of petroleum products across depots in Nigeria within the period from January to December 2013 (PEFMB, 2013). Baaziz and Quoniam (2014) recommended the adoption of big data technologies for optimization of operations in upstream sector of the petroleum industry. Hence, thousands of data-collecting sensors in facilities were used to provide continuous and real-time monitoring of assets for taking evidence-based and informed decisions. This paper argued the cost implications of taking wrong decisions far outweigh that of adopting a data extraction technology such as Aquila. Because a system is never perfect, it is expected that technologies be open to positive contributions from beneficiaries of the services rendered by the Aquila technology. Issues raised by petroleum tanker drivers, the need to stop illegal payments to unscrupulous petroleum marketers as bridging claims and relevant other issues bordering on the functionality of the Aquila further makes studies of this nature ever relevant. It is expected that the output of the research will serve as a blueprint for policy makers and stakeholders to chart the right course of action for the development of Aquila II.

The object of this paper was fastened on appraising the impact of data collection and analysis through the Aquila technology platform on the innovation capability in the Operations of PEF(M)B, particularly in the last 5 years of the use of Aquila Technology. The paper sought answers to issues such as (i) the relevance of data gathered through the Aquila platform on the tasks of the Operations Department in PEF(M)B; (ii) the role of Aquila technology data in innovating the settlement of marketers’ claims and; (iii) the observable lapses and imperfections of Aquila during implementation, which would assist in proposing an improvement to be labelled Aquila II Technology. This survey embraced data from both primary and secondary sources such as published and unpublished articles from the internet and intranet, as proposed by the Narrative-Textual Case Study (NTCS) method of research, see Abouzeedan and Leijon (2007). The justification for using of NTCS is due to the uniqueness of the Aquila technology and the insubstantial nature of academic publications on the study at hand. Section 2 of this paper dwelled on relevant literature materials reviewed to gain insight of the topic at hand. Method of data collection and analysis adopted were presented in Section 3. In section 4, the results obtained were presented and discussed, as the paper wrapped up with submissions for making informed decisions as regards the role of data on innovation.
2. Conceptual Outline

2.1 Innovating with Data and e-payment in Upstream Petroleum Industry

The upstream sector of the petroleum industry is no stranger to using data for innovations as observed by Baaziz and Quoniam (2014). Organizations use thousands of sensors installed in surface wells and facilities to provide continuous data-collection, real-time monitoring of assets and environmental conditions. Settlement of customers’ claims were also facilitated by data mining technology (PEFMB, 2013). Other sources of big data include sensors, spatial and GPS coordinates, weather services, seismic data, and various measuring devices. “Structured” data is handled with specific applications used to manage surveying, processing and imaging, exploration planning, reservoir modeling, production, and other upstream activities. Most of the data in use before Aquila were “unstructured” or “semi-structured” such as emails, word processing documents, spreadsheets, images, voice recordings, multimedia, and data market feeds, which made it difficult or costly to either store in traditional data warehouses or routinely query and analyze. Therefore, appropriate tools for Big Data was recommended for use (Baaziz and Quoniam, 2014) such as the Aquila Platform which was applied in loading and offloading of petroleum products managed (PEFMB, 2013).

The regime of e-payment system in Nigeria oil and gas sector could be traced to the early 2010 when Easy Fuel Limited, a Nigerian company engaged in the provision of e-payment solutions. The firm introduced a range of products. One of such integrated e-payment solutions had the potential of revolutionizing payment system in the upstream sector. The intent of the technology was to eliminate the use of cash in buying petroleum products at filling stations across the country over time (Tayo, 2011). The author also proposed that with these solutions in place, a customer only needs a bank card or any of Easy Fuel’s proprietary e-payment products which may be installed in the vehicle or issued as contactless Free on Boards (FOBs) to purchase fuel. With the speed pass, customers can set predetermined limits on how much and how often a vehicle can refuel. The product offered the highest level of control and accountability for fleet managers. The Sprint is a smart RFID device, which when installed in a vehicle and worked by identifying the vehicle to the Easy Fuel system (Tayo, 2011).

However, Gbodume (2014) observed that for an e-payment system to be efficient there must be a way for merchants to verify the validity of the purchase and payment must be easily convertible to cash. He also suggested that since most merchants in Nigeria were in business on subsistence basis, cash will be better appreciated. This is where an e-payment or e-transactions solutions came handy. These payment solutions target most of the concerns of merchants and more. Despite its advantages, e-payment solutions in the upstream sector have not enjoyed much acceptance as anticipated in Nigeria. To this end, the Equalizer (2012) queued behind Tayo (2011) on stakeholders expectations from Aquila.
2.2 Technology and Data, the Aquila Technology Case

As Shehu (2014) observed, the number of marketers in the downstream sector had availed data and communication technologists significant investment opportunities waiting to be explored by data experts. The author observed there were over 6,000 independent petroleum products marketers and 6 major marketers distributing and marketing petroleum products across the country. His argument was hinged on the provision of ICT and data management related services to oil companies and marketers alike.

Since PEF(M)B recognized that for any organization to metamorphose from being reactive to being proactive, it must adopt the application of big data technology for informed decision to be made. PEF(M)B has demonstrated this as the first organisation to successfully launch and implement an electronic loading and delivery system for petroleum products in Sub-Sahara Africa as observed by Abubakar, et al., (2015). The platform has automated data capture mechanism, which enabled faster processing and payment of claims with an online, real-time information management system facilitated by the Radio Frequency Identification (RFID). In addition, the technology provides data for strategic business decision planning and making. Prompt settlement of marketers’ claims accrued during pre-electronic management and payment system era was made with ease. This technology also promoted a healthy working environment by reducing the traditional paperwork, thereby reducing cost in printing and by extension transportation [PEF(M)B, 2013].

Project Aquila is a software written to work on RFID technology. The launching of the business solution also made Nigeria to join other world leaders like Canada, India and South Africa where RFID technology had been in use successfully. PEF(M)B (2013) also observed that this technology is a first of its kind in Sub-Sahara Africa. Although the process work flows was designed by an external consultant, the software codes for Aquila were written by a staff of PEF(M)B, thereby saving government an estimated two million dollars ($2million) [PEF(M)B, 2013] and promoting local content as enshrined in the Local Content policy of the government.

The adoption of data technologies in many countries by different sectors of the economy has made direct positive impact on the organizations’ efficiency. Baaziz and Quoniam (2014) sighted instances where Chevron used proof-of-concept for seismic data processing. Shell also uses piloting Hadoop in Amazon Virtual Private Cloud for seismic data processing too. To this end, much of the innovation that is key to the digitization of big data is happening at oil service contracting companies. Pool of data has made tremendous improvements possible on decision making processes in PEF(M)B (The Equaliser, 2011a). David (2004) had proposed the application of computers to process, analyze and display information about many processes involving moving “trucks.” Entering the information about the status of moving things requires repeated data entry which is cumbersome, expensive and error-prone. Consequently, many automated systems have being developed to perform this data entry task. Together these systems are referred to as automatic iden-
tification ("Auto ID") systems. Other important areas of application of Auto ID include product identification in consumer goods industries, swipe card access systems and GPS otherwise referred to as on board computer systems used in trucking. The availability of such data entry systems has provided the impetus for development of more sophisticated decision support and control systems (Duncan and Yossi, 2004).

In line with the developmental process of using technological approach for rapidly and accurately delivering product data into supply chain operations, core is the decoupling of the physical item from the information representing it (as is the case with bar codes). In particular, digital identity is the only piece of product data that must be directly located on the product itself. All the other data can be stored elsewhere, with the identity providing a unique code to access it.

Project Aquila’s benefits to PEF(M)B in particular and to the oil and gas sector in general went beyond the capacity to generate data pool on national consumption pattern of petroleum products. The benefit also included the planning and determining of the volume of petroleum products bridged across the country. Again, the manual method of determining accruals to the marketers and transporters before the adoption of this technology had become a thing of the past (Equalizer, 2013).

This technology uses the RFID in identification of tags placed on trucks which serves as a chip that monitors the loading of the truck. The RFID reader and the CN3 mobile device combine perfectly to extract required data of trucks. The same Aquila platform is used at the discharging point of trucks to capture the data of the discharging trucks which is used in processing the payment of marketers’ claims.

While introducing the business solution to stakeholders, the Executive Secretary (ES) of PEF(M)B emphasized the transparent and sustainable nature of “Project Aquila”. She emphasized it will eliminate the guesswork and perceptions on which the then consumption pattern of petroleum products were based. The information assessed on the database would show products’ loading and off-loading at depots as well as areas of the country to which they were assigned.

In addition, the success of the project relies on the principles of winning key compliant. To achieve this, there is need on the part of the staff to possess the ability to initiate a winning mentality in spite the challenges in the industry. Pertinent also are the roles and responsibilities of staff towards the creation of a winning team and highly innovative capability which are paramount to the success of the goals of the project as outlined by Abubakar, et al., (2015). The Equalizer (2012b) also proposed staffs’ initiative and innovative capability, self-confidence, enthusiasm, data analytical skills, flexibility and technical know-how must be brought to bear.

2.3 Auto ID System Architecture and Radio Frequency Identification (RFID) Technology

Automated Identification (Auto ID) involves the automated extraction of the identity of an object. The Auto ID system applied in the project Aquila as described in this paper draws heavily on past and current developments in the area of Radio Frequency Identification (RFID) (Abubakar, et al., 2015). The RFID technology
provides a simple means of automatically obtaining the unique identity of an item. In the instance of Aquila, the item in question is a petroleum product loading truck. This operation is done at increasingly low cost. The systems can then be coupled with networked databases which enable access to additional product data. Much of this functionality can readily be provided by bar code systems (See Duncan and Yossi, 2004 for details on the basic principles of operations of a typical RFID). An RFID-based Auto ID system generally comprises the following elements:

i. A unique identification number which is assigned to a particular item

ii. An identity tag which is attached to the item with a chip capable of storing
   - at a minimum - a unique identification number. The tag is capable of
   communicating this number electronically.

iii. Networked RFID readers and data processing systems which are capable
   of collecting signals from multiple tags at high speed (100s per second)
   and of preprocessing this data in order to eliminate duplications and mis-
   reads.

iv. One or more networked data bases that store the product information
   (Duncan and Yossi, 2004).

Similarly, (Duncan and Yossi, 2004) juxtaposed RFID Based Auto ID Systems and Bar Code Based Systems and observed that the RFID is a logical extension to today’s barcode-based on systems that have been so successfully applied throughout supply chains. Barcodes identify products at transition points such as shipping, receiving, and checkout. General features of these technologies are that both are inexpensive, ubiquitous and, in principle, very accurate. There are two advantages of the RFID technology over conventional bar code systems:

i. Bar codes have to be scanned deliberately by a person in a process that is
difficult to automate. On the other hand, RFID tags can be readily scanned automati-
cally without human involvement.

ii. Bar codes require line-of-sight to read, while RFID tags can be read in
any orientations as long as they are within the reader’s range (Duncan and
Yossi, 2004).

3. Research Methodology

3.1 Research Design

This paper draws facts and relevant literature from historical data. It then adopted the Narrative-Textual Case Study (NTCS) galvanized with the survey research using questionnaire to pull information from respondents on the significance of data gathered through the Aquila technology platform on the innovations in the operations of the Board. NTCS is a social science research method that employs intensively, the information, data and academic materials made available and easily accessible by information and communication technology facilities such as intranet, internet, World Wide Web, online databases, e-libraries et cetera
(Abouzeedan and Leijon, 2007). The method combines the use of quantitative and qualitative, observation, text content analysis and available official statistics in different proportions for problem-solving or problem-identification as designed by the research.

3.2 Research Instrument

A self-designed questionnaire was used for this survey. The justification for the choice of questionnaire was hinged on the uniqueness of the tool in addressing research questions as designed by the researchers. The instrument was divided into three (3) sections. Section A contains general information on respondent such as Organization, Schedule of duty and Educational qualification, etc. Section B has twenty (20) items which sought the views of respondents on the significance of data collected through the Aquila technology platform for innovations of the tasks performed by the operations department of the understudied organization. This section used a five (5) point likeness rating options comprising Strongly Agree (SA), Agree (A), Uncertain (U) Disagree (D), and Strongly Disagree (SD). In section C, attempt was made to conduct a gap analysis of the pre and post implementation of Aquila technology.

3.3 Method of Sampling and Data Collection

The target population of this essay cut across the transporters of petroleum products under the auspices of the National Association of Road Transport Owners (NARTO), Petroleum Tanker Drivers Union and National Union of Road Transport Workers (NURTW), staff of the Petroleum Equalization Fund Management Board (PEFMB) and the Independent Petroleum Marketers Association of Nigeria (IPMAN). Random sampling technique was adopted in selecting respondents from a population of about one hundred and ninety-eight (198) for the survey. A total of one hundred and forty (140) questionnaires; representing about 70% of the population, were administered on the target population. Another thirty (30) respondents representing about 12.63% of the population were interviewed. However, one hundred and fifteen (115) of the questionnaire representing about 82.5% retrieval ratio was recorded.

The inclusion criteria followed the focus and technicalities of the research questions. Questions were targeted at the Operations and the Information and Communication Technology (ICT) Departments of PEF(M)B. Other stakeholders like IPMAN, NARTO, NURTW and Petroleum Tanker Drivers Union were included because they were beneficiaries of the output of Aquila technology. Data analysis was performed using Microsoft Excel.

The tool was given to seven (7) Subject Matter Experts (SME) drawn from PEF(M)B and academics to answer the question and validate the content. The result of validation revealed that five (5) of the experts in the panel answered “yes, relevant” with minor recommendations. Their views were respected and implemented before the production of the final research tool.
### 4. Results

#### 4.1 Result on the Role of Aquila Data in Transforming the Settlement of Marketer’s Claim

![Fig. 1: Role of Aquila Data in the Innovation of the Settlement of Marketer’s Claim](image)

#### 4.2 Result on the Relevance of Data Gathered through Aquila on Tasks in PEF (M) B

<table>
<thead>
<tr>
<th>S/ N</th>
<th>STATEMENT</th>
<th>SA</th>
<th>A</th>
<th>U</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The data captured by Aquila has helped OPS in planning</td>
<td>36.61</td>
<td>35.27</td>
<td>3.13</td>
<td>6.25</td>
<td>18.75</td>
</tr>
<tr>
<td>2</td>
<td>Aquila was developed using the WBS of the OPS</td>
<td>50.69</td>
<td>49.31</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>3</td>
<td>Data gathered on Aquila has positive impact on job efficacy</td>
<td>59.69</td>
<td>26.02</td>
<td>7.14</td>
<td>7.14</td>
<td>0.00</td>
</tr>
<tr>
<td>4</td>
<td>Data on every transaction is captured on Aquila database</td>
<td>53.92</td>
<td>26.73</td>
<td>3.23</td>
<td>12.90</td>
<td>3.23</td>
</tr>
<tr>
<td>5</td>
<td>Aquila bid data capturing capacity</td>
<td>57.64</td>
<td>21.67</td>
<td>17.24</td>
<td>0.00</td>
<td>3.45</td>
</tr>
<tr>
<td>6</td>
<td>Aquila made effective data management possible</td>
<td>70.05</td>
<td>29.95</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>7</td>
<td>Most staff of OPS lacked skills to explore Aquila</td>
<td>9.05</td>
<td>7.62</td>
<td>13.33</td>
<td>56.67</td>
<td>13.33</td>
</tr>
</tbody>
</table>

Table 1: Relevance of Data Gathered through Aquila on Tasks in PEF (M) B

![Fig. 2: Gap Analysis of Aquila Business Solution](image)
5. Discussion

5.1 Impacts of Aquila Technology on Innovating the Operations of PEF(M)B

Aquila technology has obviously made some positive impact on the operations of the Operations Department and by extension the job of PEF(M)B. This is evidenced in Figure 1, as an overwhelming 70.05% and about 29.95% of respondents settled for an opinion that the business solution has made data management more effective hence it has changed the payment process in PEF(M)B. To this end, it is suggested that training and re-training of officers be done regularly in the areas of using the Aquila technology to proffer swifter responses to issues of marketers’ claims payment process. It was observed that there was weak synergy between the developers of the Aquila data extraction platform and the Operations Department of PEF(M)B. Aligning with above observation are about 47.78% and 38.42% like-minded to this proposition. This may be hinged of the local content development policy of the government, hence bulk of the design of the software was developed by a staff of PEF(M)B. This argument was supported by Abubakar, et al, (2015) and is in tandem with the report of the Equalizer (2012).

The implication of this outcome also is that with adequate training of officers in the Operations Department of the understudied Board, schedules of officers can be innovatively discharged. It is also crystal clear from Figure 1 that the solution has improved the transparency of the payment system. It is believed that this is a pointer to sustainability of the project, as it gains better acceptability from relevant stakeholders. Apparently, Aquila has eliminated sharp practices by reducing number of human interference in operations of PEF(M)B, hence it has succeeded in managing the payment process better, especially when juxtaposed with the hitherto manual process of settling claims by the Board.
On the volume of data retrievable by the Aquila, about 48% of respondents agreed that all transactions passing through designated tagging depots across Nigeria were fully captured. Such a huge data is extracted at regular intervals for informed and evidence based decisions to be made. However, Table 1 revealed that about 17.24% finds it difficult to decide if Aquila has the capacity to capture voluminous data as may be required in the operations of PEF(M)B. The consequence of this outcome on the impact made by the business solution is that the acclaimed success must be consolidated to ensure the required improvement on the ease of performing tasks in the Operations Department is strengthened.

Apparently, knowledge management and human capacity development promote a healthy working environment. The duo were promoted by the introduction of Aquila in the operations of PEF(M)B. This assertion is sequel to the sustainable prospect when about 36.61% of respondents strongly agreed and another 35.27% agreed respectively that planning of logistics has been better since data is fast assessable by the Operations Department when needed to process payment of marketers’ claims. The interview revealed there is need for improvement on the level of privileges administered to officers of the Operations Department by the ICT Department to allow the Operations Department access information as and when needed.

Another challenge of the technology is the level of privileges availed to ICT personnel, which stakeholders dread may be compromised if not checkmated. We argued that if secured privileges are extended to the Operations Department, then the bar of security is raised and porous pots closed against unnecessary intruders from the ICT Department, the technology will be more secured and this will improve on the transparency and the confidence accorded the operations of PEF(M)B.

Much as the technology has enjoyed support from stakeholders, the issue of product diversion remains a challenge. In Figure 2, about 37% of respondents strongly agree and another 25.12% agree respectively that product diversion has not being addressed in Aquila. We also gathered from the interview conducted that since the technology can only access information at the loading and discharge depots, the monitoring of the content of the truck, location or visibility of the product and truck; challenges earlier identified by Supply Chain Management (SCM) following Abubakar, et al, (2015) are germane to the success of the technology. On this basis, the gap to be covered by project Aquila II widens with time, since Duncan and Yossi (2004) orated the possibility of deploying the technology to tracking of truck and products. This survey further strengthened the claim of Olamade, et al, (2014) that visibility is the topmost among other challenges facing supply chain managers.

5.2 Pre and Post Implementation of Aquila Technology

We defined gap analysis in this context to involve the comparison of actual performance with potential, designed or desired performance. It provides a footing for measuring investment of resources against expected outcome (e.g. to turn the claims payment process from paper-based to paperless with the use of Aquila business solution).
The result revealed over 50.69% strongly agrees that the business solution has reduced complaints on the operations of the Board by about 80%. This is a pointer to the level of acceptability and popularity the solution has enjoyed since inception. The result also supported the findings of Abubakar, et al., (2015). From Figure 2 90% agree that the addition of Aquila tagging Centres in Kaduna, Lagos, Ibadan and Enugu has made the solution achieve about 90% coverage of marketers. Deductible here is the possibility of increase in the volume of data generated through the Aquila Platform over time. While it is argued that this will give room for qualitative decision making, handling such data poses even more challenges as proposed in Baaziz and Quoniam (2014).

While conducting a gap analysis, it was revealed that the pre implementation anticipated performance of Aquila technology was realized. This position was also supported by about 78% of respondents who claimed the solution has achieved about 70% success. About 19% ranked low that the system has achieved less than 60% of the expected outcome. Although stakeholders are yawning for improvement as the issue of product diversion remains an impediment to Just-In-Time delivery of petroleum products across the country.

It was also discovered that the pre Aquila era, for instance, between year 2000 to 2006 was characterized by cumbersome, falsified and shady practices, hence the process of preparation of marketer’s claims was potholed and inaccurate. This claim was supported by 55% ranking above average on the one hand. On the other hand, 24% ranked the process and operations of PEF(M)B was faring well even amidst irregularities and difficulties officers were subjected to during assessment and preparation of marketers’ claims. This paper claimed that Aquila has changed the face of the Board internally and externally. Deducible from this survey also is that the wealth of experience of the respondents that has been brought to bear, since about 33% have about 12-17 years experience. To consolidate this argument, on the gap analysis between expected outcome and obtained deliverable, about 78% of respondents agree that the business solution has played a leading role during the periods under review. The benefit of good teamwork was further established as has being enjoyed by the Aquila implementation team. We therefore argued the sustainability of every system is hinged on the quantum of human capital development built around it.

6. Conclusion

Aquila technology is a data extraction platform designed exclusively for the purpose of pooling data at both loading and discharging depots in Nigeria for the purpose of facilitating the process of making payments to marketers in compliance with the PEF(M)B mandate of equalizing the price of white petroleum products across board. The intent of this paper was to appraise the impact of the data pool through the Aquila technology platform on innovation capability of the operations in the understudied Board. Responses were fetched on the relevance of data gathered through the Aquila platform on swiftness of tasks delivery in the operations department of PEF(M)B. The survey which adopted a blend of the random sampling techniques and the NTCS gathered that the place of data in transforming the
process of settling of marketers’ claims can never be over emphasized, since such data empower the officers in the Operations Department to facilitate payments just-in-time. It was also observed during the gap analysis that the development of Aquila technology has created a clean and transparent system to the operations of the Board. The system may not be perfect, but it has largely exceeded stakeholders’ expectations. To gain stakeholders support, the need for teamwork and robust human capital development was underscored as enjoined by the local content policy, hence the contributions enjoyed by the business solution from staff of the Operations and the ICT Departments can be sustainable.

The paper put forward the need for a better cyber security policy in order to regulate levels of privileges given to the ICT personnel. The data capturing at both loading and discharging points should also be galvanized with product movement chips or trackers to eliminate the challenges of visibility and diversion of products. In addition, the paper proposes immediate commencement of Aquila II as a solution to the aforementioned challenges which should be anchored on a strategic implementation legal framework for the sustainability of success recorded. An innovative tagging should be deployed to avoid marketers abusing the process, penalties for non-adherence to the modus operandi of the Aquila may be an option to deter saboteurs. The technology should be made more robust and interactive enough to allow easy transfer of tangible facts and data capturing. The areas of how to curb product diversion using the Aquila technology and integrating the technology to an e-payment system are open to further studies.

**Correspondence**

Abubakar Kazeem  
National Centre for Technology Management  
Federal Ministry of Science and Technology  
North Central Office, Abuja, Nigeria  
Email: kz4tawa@gmail.com  
Tel.: +2348028751764

**References**


