

A Coherent System For Vehicle Clearance And Registration

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Abstract: A coherent system for vehicle clearance and registration is a unified system that is logical and consistent. It is a new online registration system that will streamline and simplify clearance and registration processes and serve as a clearing house and depository of information on all entities regulated by the agency. The unified system will combine multiple registration processes, information technology systems and form into a single, electronic online registration process. This platform can be used to construct a more complex structure closely connected and work successfully together. The Nigerian Custom Service (NCS), Federal Road Safety Commission (FRSC) and the States Board of Internal Revenue (SBIR) were the agencies that integrated to operate on this system. The idea behind designing a coherent (unified) system was to create a central ICT compliance interface that will unify all the procedures involved in vehicle clearance and registration with all the agencies concerned in Nigeria, while solving the problems encountered with the existing systems such as delay in verifying the authenticity of vehicle documents, participation of unauthorized officers, wrong charging of fees and exploitation by registration officers, improper accounting of registration transactions amongst others. The objectives were to develop a standardized and harmonized system where all modes of vehicle clearance and registration establishes a dependable computerized database for easy verification and assessment of vehicle processes, to eliminate the participation of unauthorized officers in vehicle clearance and registration, to generate a treasury single account (TSA) policy which channels all inflows from these agencies in to the government account which will regulate the level of accountability and transparency in the financial resources of the Nigerian government. The methodology adopted in designing the coherent system is OOHDM (Object Oriented Hypermedia Design Method) suitable for the development of web applications that gives a concise and precise information about a vehicle starting from the exact day of importation to clearance and registration and renewal of licensing on a single platform.

Keywords: Coherent, vehicle Clearance, Registration System

INTRODUCTION

Vehicle clearance and Registration is a process of completing the service description which provides the necessary procedures and requirements for all vehicles for the purpose of establishing a link between a vehicle and its owner “Suryanarayana (2015)” Vehicle clearance and registration in Nigeria has been in existence for the past decade ago and documents have been manually operated which in turn has not helped to raise the efficiency of general automotive services in recent years. Additionally, there are multiple documents issued by many agencies to a particular vehicle. This situation opens more gaps for fraud since an officer from one agency cannot verify the authenticity of a document issued by another agency at any point in time. So, we propose a coherent system where proper interactions and collaborations will be created among agencies involved with vehicular administration and activities in Nigeria. These agencies are: Nigeria Customs Service (NCS), Federal Road Safety Commission (FRSC), and States Board of Internal Revenue (SBIR). The system will also be required to give proper information about a vehicle starting from the exact date of importation to registration and renewal of licensing on a single platform. Vehicle owner information will also be efficiently retrieved from the system by the Nigerian police when a crime is committed with such vehicle. Officers from any agency can verify vehicle documents issued by other agencies by visiting the unified web application.

Problems encountered in the existing system involves

- a. Participation of unauthorized officers in the vehicle clearance and registration process.
- b. delay in verifying the authenticity of vehicle documents because there is no online system where all the information required for vehicle registration from all the agencies involved is stored.

- c. Difficulty in tracing a record/information concerning a vehicle owner due to improper information keeping as a result of carelessness or volume in the size of the record kept.
- d. Car buyers have reportedly been victims of deceit because there are no way these ones can confirm whether a particular vehicle with a particular engine number has been cleared of custom duty.
- e. Loss of files and human error has led to denial of payment by licensing agencies.
- f. Illegal extortion of funds and exploitation by agents who are also officials of vehicle registration agencies.
- g. Improper accounting of registration transactions.

The objectives are:

1. To develop an integrated system to be used by the Nigerian Custom Service (NCS), the Federal Road Safety Service Commission (FRSC), and the States Board of Internal Revenue (SBIR) to foster documents analysis and verification.
2. To eliminate participation of unauthorized officers in the vehicle clearance and registration process with the aid of the integrated system.
3. To develop a harmonized system where illegal extortion of funds and exploitation will be totally eliminated by introducing the Treasury Single Account (TSA) that will channel all government inflows in one account.

All these measures aim at fostering an integrated initiative which hosts the functions of all agencies involved in vehicle clearance and registration. Officers on duty will not require original documents anymore. Instead documents can be verified on the website with an internet enabled device. The proposed coherent system will allow automatic change of ownership when a vehicle is disposed through the vehicle registration code generated. One unified web application is developed and all the information about a vehicle can be found on the website irrespective of the agency that issued the command. The scope focuses on building an integrated system for vehicle clearance and registration with the agencies involved in South-East Nigeria and ensuring that inflows from these agencies are channeled into the Treasury Single Account

(TSA). The new system will be of great significance in Nigeria because it will expedite the efficiencies of solely administrative officers in the processing of vehicle clearance and registration data and documents during online processing.

II. Literature Review

Vehicle clearance and regulations were inherited from colonial administration. Dittman (2003). the first Edition was applied to the operations of all motor vehicle registration. The Federal Road Safety Commission in conjunction with the Joint Tax Board (JTB) commenced the issuance of new Number Plates in an attempt to harmonize all existing modes of licensing vehicles nationwide. This according to the Corps Marshall and Chief Executive is part of the commission's strategy towards restoring order and sanity in the nation's Motor Vehicle Administration Scheme. To this end Federal Road Safety Commission (FRSC) introduced an Enterprise System called National Vehicle Identification System (NVIS) which is a coherent (unified) system designed to automate the processes involved in the Number Plate Production and Vehicle clearance and registration. NVIS is open to members of the public who are Vehicle Owners as well as representatives of States, Federal Ministries, Departments and Agencies. (<http://nvis.frsc.gov.ng/>). The NVIS incorporated only States Board of Internal Revenue (SBIR), Vehicle Inspection Officer (VIO) and Federal Road Safety Service Commission (FRSC). Hogan, J.O. (2015) in a study conducted in discussing the effectiveness of the coherent system, found out in that study that the respondents in forty-four cities across the United States view the integrated system as a major force in the fight against crime. This too could be applied in Nigeria if properly established and managed. According to the Minister of Finance, Mrs. Kemi Adeosun, who disclosed this in a workshop in Abuja titled "Federal Government to use the integrated system to tackle corruption" noted that the country was losing billions of naira annually to the activities of corrupt officers and described the integrated system as a powerful tool against the illicit and dangerous practice. She also said that there is a need to introduce the coherent system as a platform that provides a form of identity for each vehicle that will be linked to proof of ownership and connected to a centralized database. She added that the Programme was also expected to significantly boost vehicle security and ease of transfer of vehicles from one owner to the other (The Punch Newspaper, 2017).

A variety of technologies have been tested and used by many law enforcement agencies in Nigeria. The

technologies used in data collection and processing include a variety of systems such as Mobile Phones, optical storage disks, portable computers, and digital cameras. The current computer technologies allow shareholders to pay their collection/renewal bills at the designated banks or existing offices, electronically transfer the payment to the state agency account and provide deposit slips for the collection of receipts at the state agencies. The use of online error checks, and subsequently the needs for reentering Vehicle detailed data are not inevitable. At the beginning, these devices seem to be the best solution to all the registration problems because it tackles the issues of payment of vehicles registration dues into the government's account. However, it still has its limitation, as they have not met up with the demands of the masses that spend endless time anxiously waiting for their demands to be met at the Licensing offices. Hence, the full computerization has not been effected as expected while technology and software programming has advanced in other countries. Shall we continue to wait for the criminals to get away with our stolen vehicles? Shall we keep spending endless time waiting on queues which have been divulged by the corrupt practices of officials based on personalities? Shall we spend endless time searching for owners of whose vehicles have been recovered when software can be developed to tackle such problem like these? Sameer, (2015). The merit of automation is far reacting more than just saving time and holding down personal cost, automation gives vehicle management the means to truly streamline the vehicle clearance and registration processes. Automating manual processing tasks allow registration officers eliminate duplicate data entry, move towards a completely paperless environment and process multi-day function, emphasizing the use of the coherent system in vehicle clearance and registration. Zhang, *et al.* (2016), was of the opinion that "developing computerized system can help vehicle licensing officers and offices to automatically register with ease, so that the process becomes an automatic day to day operation". The solution can help motor licensing officers and offices to improve registration by automating the manual based process, error caused by manual interventions can be reduced and electronic process support enables faster processing time, meet regulatory demands archive, email and documentation so that it is easily accessible, usable and quickly retrievable for legal demands. For a computerized system to work efficiently and effectively, a strong and reliable database is needed. According to Microsoft encyclopedia, database is a structured format for organizing and maintaining information that can be easily retrieved. According to Ahmed, (2006), "there are many reason for vehicle registration, take for instance, if you just bought a vehicle and completed all

the registration requirement and you are given your vehicle license, then on your way back from the village, you were attacked at gun point and the vehicle snatched from you, you reported to the nearest police station and if you are lucky, your vehicle will be found". It would be difficult for you to get your vehicle within a short period because of the existing system. According to Balogun, (2006), states that in his Road Safety Practice in Nigeria "the method of vehicle clearance and registration has caused a lot of people pains, a pregnant woman died on the queue in her quest for vehicle registration." According to Dr. Ikechukwu, (1995), states that "our vehicle registration offices today are faced with potential rise and inefficiencies associated with manual i.e. paper based processes which are costly, prone to error and require mental and manual labor. Heightened regulation in the country is also placing these vehicle owners under pressure to meet litigation needs".

According to Oyeyemi, (2003), states in his stand in Road Traffic Administration states "the level of tediousness in the system of vehicle registration and administration in Nigeria is so alarming that a new modified method that will be easy and simple is required." According to Manager, (2016), "most vehicle owner finds it difficult to register their vehicle on time due to the manual process which consumes time. For you to register your vehicle within a short period, you need to know one or two persons in the licensing office. This factor is peculiar to most Nigerian offices.

Analysis of the Existing System

On importation, a vehicle owner must go for assessment and custom duty payment at Nigeria Customs Service (NCS) office. After the payment, the vehicle owner must obtain verification and clearance papers from the Nigeria Customs Service (NCS) office. This paper will serve as evidence that the custom payment was duly made. Then the applicant proceeds to registration.

To register a vehicle, an applicant is expected to have a valid driver's license which he will obtain from the Federal Road Safety Commission (FRSC) office. Biometric data capturing of the applicant and a certain amount of money will be needed to process a new one. After the process is completed, a temporary driver's license which will last for 60 days will be given to the applicant. The applicant will go to the Motor Licensing Authority Office of the State Board of Internal Revenue (SBIR) and fill the allocation of plate number form and submit with other personal credentials. Payment for Vehicle number plate will also be made. The vehicle will also be physically inspected by the Vehicle Inspection Officer (VIO) to check for its

road worthiness. After the vehicle has been certified, the applicant will be issued a Road Worthiness Certificate. Next the applicant proceeds to Federal Road Safety Commission (FRSC) to verify the documents provided. Some document required to register a vehicle in Nigeria include driver's license, valid ID card (International Passport or national ID card) and proof of address. Others are custom papers (imported car), chassis number, and engine number. Documents to be verified for brand new cars are: driver's license, auto insurance policy, attestation letter from the vehicle dealer, car invoice, delivery note from the vehicle dealer, passport photograph, Motor Vehicle Duty Certificate, and means of proof of address (address on utility bill). After due verification, the official will forward all documents to Nigerian Police who will now sign and stamp the verified documents. The applicant will pay a certain amount in the bank and then proceed to the State Board of Internal Revenue (SBIR) where he will obtain proof of Ownership Certificate (POC), Vehicle Identification Tag (VIT) and Vehicle Number Plate (VNP).

Analysis of the New System

The new system is a client-server computer program in which the client (including the user interface and client-side logic) runs in a web browser. On importation, the vehicle owner registers the vehicle engine number and chassis on the web application. Other details that will be provided on the registration page for custom duty requires personal details, Certificate of Entry, Payment Schedule, Engine Number, Receipt of Purchase, Terminal Delivery Order, Vehicle Releasing Invoice, passport photograph and photo of the vehicle. The custom officers at the administrative side of the web application will review the application and also check the vehicle information registered. If verifications are successful, payment gateway will be generated for the user to pay online. Once payment is confirmed, payment confirmation documents will be printed from the website. These documents will acknowledge that the payment was actually made. The user can also request that the document be delivered at home with little additional charges. With the custom duty paid, the applicant can proceed to the States Board of Internal Revenue (SBIR) page on the same website where the user will input the chassis number of the vehicle and then the system will verify if custom duty has been duly paid. If yes, the applicant can proceed; else the system will redirect the applicant to the custom duty page. After successful payment of the custom duty, an applicant must visit the Federal Road Safety Commission (FRSC) section. Here the applicant will be required to provide details of his driver's license. The name on the driver's license must be name that will be used in the registration. The picture of the driver's

license (front and back sides) will be uploaded too. If the verification is successful, the user can proceed to SBIR else, the user will be redirected to Federal Road Safety Commission (FRSC) section to obtain a driver's license. To obtain a driver's license, the applicant must register at the Federal Road Safety Commission (FRSC) section, pay online through the web application and undergo the driving test. If the applicant's driving ability is satisfactory, biometric data is captured and temporary driver's license will be issued. After some weeks, the applicant will be contacted for the permanent copy. If the applicant already has a driver's license, the application can proceed with registration on the States Board of Internal Revenue (SBIR) section on the web application. The applicant will provide custom duty serial number, driver's license number and also fill the allocation of plate number form online. After completion of the form, the applicant will make payment online through the web application. After payment, the applicant must take the vehicle and the payment details to any Vehicle Inspection Office (VIO) so that the vehicle will be physically inspected. After successful inspection, the Vehicle Inspection Office (VIO) will issue verification code that will be used to finish registration on the website. Once verified, all documents and information will be forwarded to Nigerian Police section. The Nigerian Police will stamp and conduct a final verification. After the final verification, Proof of Ownership Certificate (POC), Vehicle Identification Tag (VIT), Vehicle Number Plate and other documents are sent to the nearest SBIR office from the address the applicant provided.

The system also allows an applicant to pay for registrations all at once. To do bulk registration, the applicant will visit 'Bulk Registration' Section. The applicant will select registrations desired and web payment page will be displayed. After payment, a payment code with chassis number will be generated. The applicant will use this printout to visit Federal Road Service Commission (FRSC), Vehicle Inspection Officer (VIO) and finally States Board Of Internal Revenue (SBIR) for collection of Proof of Ownership Certificate (POC), Vehicle Identification Tag (VIT), Vehicle Number Plate and other documents. Additionally, these documents can be renewed online. The new system will be used to retrieve information about a particular vehicle using only the chassis number of the vehicle. An officer on the road can check from the web application if a vehicle has been cleared by all other agencies: Nigerian Custom Service (NCS), Federal Road Safety Commission (FRSC), Vehicle Inspection Officer (VIO), Nigerian Police Force (NPC) and States Board of Internal Revenue (SBIR).

Proposed System and Implementation

The purpose of the new system is to create a platform that will facilitate all the procedures by all the agencies in one web application. The coherent system is a client-server computer program in which the client (including the user interface and client-side logic) runs in a web browser. On importation, the vehicle owner registers the vehicle engine number and chassis on the web application. Other details that will be provided on the registration page for custom duty requires, personal details, Certificate of Entry, Payment Schedule, Engine Number, Receipt of Purchase, Terminal Delivery Order, Vehicle Releasing Invoice, passport photograph and photo of the vehicle. The custom officers at the administrative side of the web application will review the application and also check the vehicle information registered during importation. If verifications are successful, payment gateway will be generated for the user to pay online. Once payment is confirmed, payment confirmation documents will be printed from the website. These documents will acknowledge that the payment was actually made. The user can also request that the document be delivered at home with little additional charges. With the custom duty paid, the applicant can proceed to the SBIR page on the same website. On the States Board of Internal Revenue (SBIR) section, the user will input the chassis number of the vehicle and then the system will verify if custom duty has been duly paid. If paid, the applicant can proceed; else the system will redirect the applicant to the custom duty page. After successful payment of the custom duty, an applicant must visit the States Board of Internal Revenue (SBIR) section. Here the applicant will be required to provide details of his driver's license. The name on the driver's license must be the name that will be used in the registration. The picture of the driver's license (front and back sides) will be uploaded too. If the verification is successful, then the user can proceed to States Board of Internal Revenue (SBIR) else, the user will be redirected to Federal Road Safety Commission (FRSC) section to obtain a driver's license. To obtain a driver's license, the applicant must register at the Federal Road Safety Commission (FRSC) section and pay online through the web application. After payment, the applicant proceeds for driving testing. If the applicant's driving ability is satisfactory, biometric data is captured and temporary driver's license will be issued. After some weeks, the applicant will be contacted for the permanent copy. If the applicant already has a driver's license, he/she can proceed with registration on the States Board of Internal Revenue (SBIR) section on the web application. Where provision for custom duty serial number, driver's license number and also allocation of plate number form will be filled online. After which payment will be

made through the web application. the applicant must take the vehicle and the payment details to any Vehicle Inspection Office (VIO) so that the vehicle will be physically inspected. After successful inspection, the Vehicle Inspection Office (VIO) will issue verification code that will be used to finish registration on the website. Once verified, all documents and information will be forwarded to Nigerian Police section. The Nigerian Police will stamp and conduct a final verification. After the final verification, Proof of Ownership Certificate (POC), Vehicle Identification Tag (VIT), Vehicle Number Plate and other documents are sent to the nearest SBIR office from the address the applicant provided.

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The coherent (unified) system will be used to retrieve information about a particular vehicle using only the chassis number of the vehicle. An officer on the road can check from the web application if a vehicle has been cleared by all other agencies. Quality is a major factor for the Vehicle Registration data collected. In Nigeria, Vehicle Registration data such as vehicle license, car insurance, driver's license and other vehicle related documents are usually collected by officials of both the Federal Road Safety Commission (FRSC) and the State Liaison Office for both the Federal and State Governments respectively. Sometimes the data forms are collected away from the scene. These data collected often have problems including errors, incomplete information, illegibility due to poor handwriting, and errors due to multiple data entries at various levels. The data obtained might not be of acceptable quality.

Peter *et al.* (1998) defined data quality as a set of dimensions which includes accuracy, precision, completeness, coverage, timeliness, and consistency. The most commonly observed attributes of data quality are data accuracy, data completeness, data consistency, and timeliness of the data. This coherent (unified) system of vehicle was introduced to enforce strict compliance to traffic rules and regulation as well as providing a proper data as to the behavior of road users

Result and Discussion

To register a vehicle, an applicant is expected to go to the Motor Licensing Office of the State Board of Internal Revenue (SBIR) where he would be guided on the process and procedure of vehicle registration. Alternatively, the applicants can apply through online by visiting www.nvisng.org, fill forms and submit after which an item number will be automatically generated which will be taken to SBIR for necessary payment. The applicant will then be issued with the necessary vehicle documents like Vehicle License, Certificate of Road Worthiness.t.c.

Manual processes involved in vehicle clearance and registration is cumbersome, inefficient and tedious and also consumes time. With that in view, the coherent (unified) system for vehicle clearance and registration solves the problems encountered in the existing system while enhancing security, easy flow of information and provides for consistency while blocking all the hurdles that have been the bane of the growth of the economy. The coherent vehicle registration system is a must for any country that wants to be information and communication technology inclined and ready to reduce the vehicle crime rate and corruption in her system.

The existing system has no reliable standard database for populating adequate required owner and vehicle information while the coherent (unified) system facilitates all procedures involved in vehicle clearance and registration in one web application, a platform that enables vehicle owner register their vehicle with government authorities with ease and less difficulty.

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