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Mitigating Building Plans Approval Process through e-Planning Application in Southwestern, Nigeria

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ABSTRACT: *In developed nations, the planning agencies and regulatory bodies endeavor to take into consideration the needs of the people by producing better housing for a better and a healthier life. This was indeed the priority of the government of Ondo State after its independence from the British. With the recent export of COVID 19 to the world, getting things done at people's comfort becomes necessity to ensure social distancing stipulated by policy makers. This study was carried out to provide a mitigate measures for building plan approval processes in southwest, Nigeria using Ondo State as a case study. The study examined the current building plans approval processes practiced in the state Ministry of Physical Planning and Urban Development (MUPPUD), Akure. Random sampling method was used in selecting applicants using the number of plans approved between May to September 2023. It was observed that, it takes longer time for building plan to be approved and the client needed to visit the office to fast track the approval process. Despite the fact that applicants have access to internet facilities through the comfort of their own, none of the planning approval information is online to ensure speedy process. The study hereby focused on modernizing the process through the application of e planning in order to improve speedy approval processes, to facilitating planning activities among government officials and associates and to ensure shared centralized services that are accessible by all. With this, if all the recommendations are well address and implemented, the mode of building plan approval in the region will be quicker, easier and users friendly.*

KEYWORDS: e-planning, ICTs, housing, planning authority, plan approval

INTRODUCTION

Town planning has had a complex relationship with Information and Communication Technologies (ICTs) for a long time. The introduction of ICTs in cities trends to be a turbulent and ad-hoc process, although several cities claimed to be technologically inclined (Anttiroiko, 2012).

Graphic and mapping tools, statistical data bases and visual simulations have frequently been used in urban planning practice. More recently, a set of new technologies, many of which have quickly entered every day or mundane use, has been developed independently of urban planning, such as community web environments social media platforms, and locative and mobile technologies. These technologies enable citizens to create and share data information about local issues and urban environment (Saad-Sulonen, 2010).The onset of social networks, such as Facebook.com, Google+, and Twitter and the emergence of communication applications for mobile phones, such as WhatsApp, have changed the way people communicate, particularly in countries with high Internet uptake (Ellison, Steinfield, & Lampe, 2011). Likewise, these communication tools have the potential to shape urban planning now and in the near future. In particular, the requirement for public participation in planning processes could benefit from the engagement of people via social networks (Donders, 2010).

E-planning is the socio-cultural, ethical, and political practice in which people take part online and offline in the overlapping phases of the planning and decision-making cycle (Horelli & Wallin, 2010). E-planning is the extensive use of information and communication and communication technologies in all phases of the urban planning process, within the framework of positive planning. It takes into consideration extended range of digital tools official, unofficial, expert, and mundane and addresses their use in the context of citizen participation in urban planning.

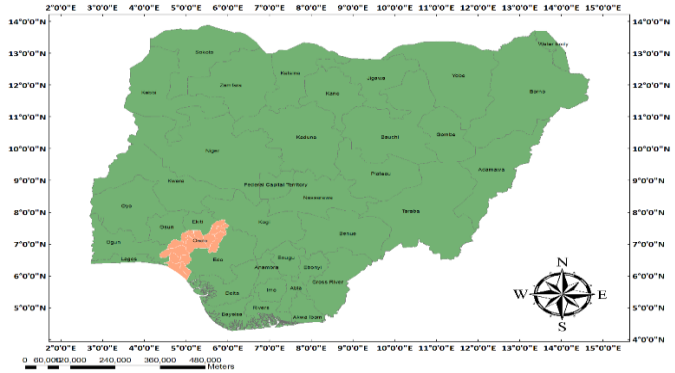
E-planning includes consideration on how to use ICTs for enhancing the participation processes (Silva, 2010). However, the ways the modes of participation are changing, as well as the administration and decision-making processes too. The emphasis tends to be on new tools and structures, as well as on the timing for participation. In addition, the overall complexity of e-planning seems to change the linear process and stable power relations of planning (Wallin & Horelli, 2012). Public participation comprises multiple activities in which planners can have some discretion to choose among a number of modes of communication. Therefore, one can expect to identify a variety of uses and aspirations of e-planning in different contexts.

It is universally accepted that housing the most important for physical survival of man; the others being food and water (Aluko, 2004). Adequate shelter contributes to the attainment of physical and mental health of a nation and stimulates the social stability, work efficiency and development of the individual. Shelter, both in units or multiple forms, is a significant component of the physical form and structure of a community, while the human and family contents of the house is part of the very spirit of life and prosperity of the society (Adeniyi, 1974). Housing is the root of a healthy lifestyle and it is a major evidential resource of comfort for the human race (Dunn, 2002). This is because “residential satisfaction has been noted as one of the central components of individuals’ general quality of life” (Baiden, Luginaal, & Asiedu, 2011).The building of a house involves

several stages such as acquiring land, registration of the land (certificate of occupancy), architectural and engineering design of the house and obtaining Building Permit. This research is more interested in the adoption of e-planning strategy in building plan approval in planning ministries in Ondo state for speedy approval process.

STUDY AREA

Ondo State is a state in Nigeria created on 3 February 1976 from the former Western State. It originally included what is now Ekiti State, which was split off in 1996. Akure is the state capital. Each Nigerian state has several ministerial offices representing the federal government. Ondo State borders Ekiti State to the north, Kogi State to the northeast, Edo State to the east, Delta State to the southeast, Ogun State to the southwest, and Osun State to the northwest. Ondo State with a coordinates $7°10'N\ 5°05'E$ which covers a land area of 14,793 square kilometers with its administrative capital at Akure. The population of the state as reviled by the census that was held in 2016 is 3,441,024. It is one of the 9 states of Niger-Delta because it is an oil producing state. The state consists of eighteen local government areas and blessed with rich ethnic composition largely from the Yorubas subgroups of Akoko, Akure, Ikale, Ikeja, Ilaje, Ondo and Owo people. Ijaw minority (such as Apoi and Arogbo) and Ilaje populations inhabit the coastal areas; while sizeable number of the Ondo State people who speak a variant of the Yoruba language similar to Ile-Ife dialect reside in Oke-Igbo. The tropical climate of the study area is broadly of two seasons: rainy season (April – October) and dry season (November – March). The annual rainfall varies from 2,000mm in the southern areas to 1,150mm in the northern areas. The State enjoys luxuriant vegetation with high forest zone (rain forest) in the south and sub-savanna forest in the northern fringe. See figures1 and 2



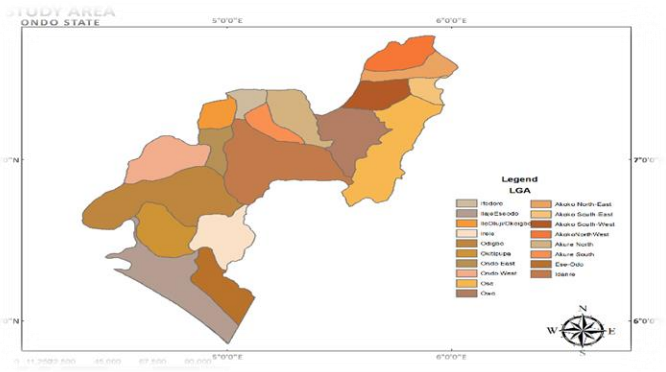


Figure 1: Map of Nigeria showing Ondo State. **Figure 2: Map of Ondo State.**

Source: Ministry of Physical Planning & Urban Development, 2023

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LITERATURE REVIEW

E-Planning Application for Building Plan Approval

Computer methods and tools have been used in urban planning for nearly half a century. The nature, type, purpose and ubiquity of their use has changed over time as a result of changes in planning theory and practice and dramatic increases in computing power and sophistication of software (Awais, 2015). A vast array of computing applications, both planning specific and generic, are now routinely used by planning authorities all over the world. Planning methods and related computer applications can be placed in two broad categories: "generic" and "(strategic) planning specific". The examples of generic tools are mapping, databases, spreadsheets, scheduling software and in more recent times internet-based data collection or delivery of services. The generic tools are widely (but not necessarily exclusively) used for day to day planning including development assessment. The planning (process) specific tools are closely associated with collaborative strategic planning. They often involve participatory dialogue and visioning, preparation of alternative courses of action, visualization and evaluation of alternatives, finding common ground among stakeholders, and generating consensus on local development. The use of generic computer tools to increase general efficiency and to facilitate development assessment is strongly supported by the NSW state planning. Planning reforms being pursued in NSW are very actively promoting eDevelopment-Assessment (electronic lodgment, tracking and assessment of development applications) (DoP, 2007) .Use of other generic computer applications to facilitate, expedite and standardize routine day today planning is actively being pursued.

However, the reforms have not advocated the incorporation of any planning-specific tools to engage stakeholders in collaborative strategic policy making. Computer aided policy-making used for visioning, visualizing and assessing alternatives (Wyatt, 2012) is not part of the planning reform agenda in Australia in general and in NSW specifically According to reform documents in NSW (DoP, 2007) electronic planning is used around the world and Australia to improve customer service, deliver simple experience for users (developers) and to make it easier for business to find out where to invest. In 2014 the NSW state planning agency (NSW Planning and Environment) introduced a spat of "e-Planning" tools to develop a smart NSW and smart Sydney (NSW Planning and Environment, 2014). A quick appraisal of the tools demonstrates that they are mere office efficiency enhancing and client (developer) assistance automation mechanisms. A brief description of these tools is given below.

Application Tracking

Application Tracking is an online system that allows developers to monitor progress in their developments. The objective of this system is to fast track, simplify and assist development

approvals process. Speed, simplicity and encouraging building construction activity are larger goals of the planning system reforms of the past 10-15 years as well. The system is currently being trailed in some local councils in NSW. NSW state planning departments makes grants available to encourage local councils to participate (NSW Planning and Environment, 2014).

Electronic Housing Code

The Electronic Housing Code (EHC) is an online system that allows developers to determine if they can build any planning approvals (exempt development) or using a fast-tracked approval process (complying development). Developers can lodge and track complying development applications online. Developers as result enjoy a fast and standardized system accessible anywhere anytime. It is also free of charge. It is worth noting here that complying development is also closely associated with privatization of development approvals through private certifiers (NSW Planning and Environment, 2014).

Interactive Buildings

The Interactive Buildings is a free online tool that will assist developers to comprehend development standards for common building works that require no planning approvals (exempt development). Using this tool, prospective developers will be able receive advice in simple language on what development standards apply to various parts of residential, commercial or industrial buildings. All they will need to do is clicking on the relevant part of the building (NSW Planning and Environment, 2014).

Planning Viewer

The Planning Viewer is a free online tool that shows what planning rules apply to properties in NSW. Operating on Google-maps technology it assists prospective developers in rapidly discovering what planning rules apply to individual land parcels. It also enables developers to search for properties that have certain planning rules applicable to them. For example, it allows developers to quickly see where multi-storey buildings are permitted (NSW Planning and Environment, 2014). Contents of other planning reform related documents from NSW (DoP, 2008; NSW Planning and Environment, 2014) and the rest of the country can be cited to prove that computers-use is for routine planning only. The capacity for online planning services in Australia has not been utilized for public participatory planning. Indeed, online participatory planning mechanisms are inconsistent with the centralizing of planning and the reduction of community participation which are being pursued in planning reforms (Piracha, 2008). Nowhere do we see any mention of collaborative community planning helped by computer-aided policy making tools

such as Cyber Quest, STRAD, Expert Choice, strategizer etc. The reforms lay a strong emphasis on use of electronic planning. However, the entire focus of the state is on the use of technology to facilitate routine planning. Electronic lodgment, tracking, assessment of development application seems to be at the heart of state's efforts in this area. One does not find even any mention of computer tools that can be used for collaborative strategic planning and/or policy-making in the state's vision for planning systems. This paper posits that the "the lack of ePlanning application in Ondo State" may contribute towards the delay in building approval. It is here that the paper wishes to develop an ePlanning application which focuses on building plan approval in planning ministries, providing the necessary planning approval and for tracking approval status online.

Electronic Tools and Web 2.0

For each from of citizen involvement, several electronic device or tools may be employed. DEMO-net, following (Macintosh, 2007)**,** put together a comprehensive list of eParticipation tools with shot definition (see Table 1).

Table 1: eParticipation Tools

Tools	Definition
eParticipation Chat Rooms	Web application where a chat session takes place in real time especially launched for eParticipation purposes.
eParticipation Discussion forum/board	Web application for online discussion groups where users, usually with common interests, can exchange open messages on specific eParicipation issues. Users can pick a topic, see a "thread" of messages, reply and post their own message.
Virtual Communities	Web applications in which users with a shared interest can meet in virtual space to communicate and build relationships; the shared interest being within eParticipation context.
ePanel	Web application where a recruited set, as opposed to self-selected set, of participants gives their views on a variety of issues at specific time.
ePetitioning	Web applications that host online petitions and allow citizens to sign in for petition by adding their name and address online.
eConsultation	Web applications designed for consultations which allow a stakeholder to provide information on an issue and others to answer specific questions and/or submit open comments.
Blogs	Frequently modified web pages the look like a diary as dated entries are listed in reverse chronological order.
GIS-tools	Web application that enables the users to have a look at maps underlying planning issues and to use them in various ways.

Search Engines	Web application that enable user's finds and retrieve relevant information typically using keyword searching.
Frequently asked questions (FAQ)	A tree of questions and answers that can be searched using keywords or by inputting a question or statement.
Web Portals	Websites providing a gateway to a set of specific information and application.

Source: DEMO-net, 2017

This list includes tools such as Wikis and Blogs, which are considered as prototypes of a new generation of internet service called Web 2.0 or "participatory web" **REF** and which raise new hopes for increasing citizen engagement and participation. Another term for the new tools and new modes of using existing tools is "user-generation content" (UGC). Many of this tools are not really new because the early newsgroups on the net, long before the World Wide Web, consisted only of user-generated content. However, it was plain text, black and white (or green or amber on black, referring to the monochrome monitors widely in use at that time) and produced by a few thousand people only. Today, user-generation content is text, audio and video, accessible by billions of people in portals, tagged and ranked by other people. It covers webcasts, RSS feeds, podcasts, photos and video portals, i.e., features and platforms for distributing self-produced audio and video files, which can be employed in urban planning process as well. But there are other participation dimensions of Web 2.0 as shown in Figure 2.1.

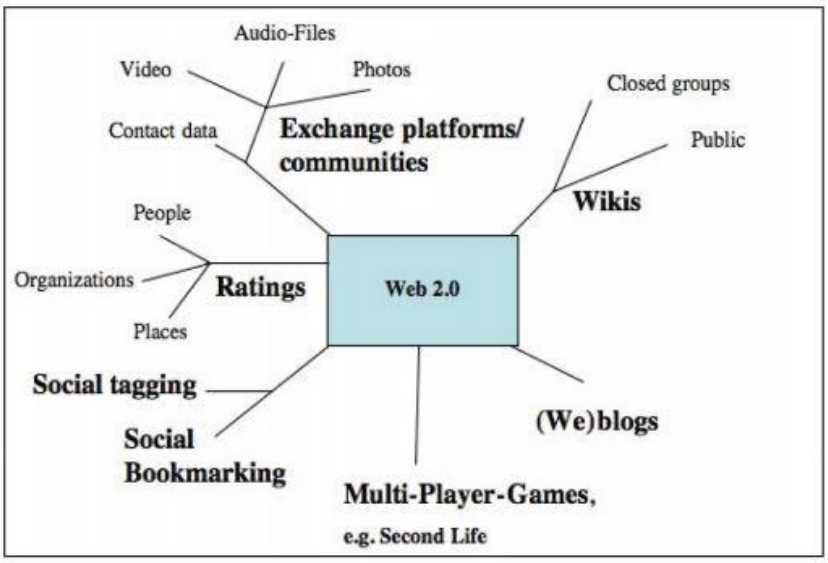

Figure 1: participation dimensions of Web 2.0.
Source: (DoP, 2007)

Another relevant Web 2.0 feature is social tagging. People attach keywords to elements of plans, which they choose themselves. The tools can link one person to others who have used the same keyword, and so shared views across existing social groupings may emerge.Of particular relevance for participation are Wikis, which allows for collaborative writing of plans or other documents instead of single messages and comments. Via a Wiki, a statement of public opinion, a shared view on a subject can evolve. But many citizens are willing to write. So far they could only read, and their voice was not heard. Now rating features allow for form of comment appropriate to this group. Just by clicking one to five starts or "agree"/" disagree" they can make their own voice heard. Another relevant Web 2.0 feature is social tagging. People attach keywords to elements of plans, which they choose themselves. The tools can link one person to others who have used the same keyword, and so shared views access existing social groupings may emerge. All these tools can be used to aid building plan approval process so as to enhance building plan approval process.

METHODOLOGY

In this study, the officials in charge of the planning approval were interviewed and those engage in the process and were picked at random from the population based on the total number of building plans approved in month of May to September 2022. This is to ensure that the current sample information on the total number of plan approved between this period were 277 as presented in Table 2.

Table 2: Approved Building Plan in MPPUD between May to September 2022

S/N	Month	Number of Building Approved
1	May	73
2	June	45
3	July	60
4	August	50
5	September	49
	Total	**277**

Source: Field Survey, 2023

The sample frames used were two hundred and seventy-seven (277), which was derived from the total number of plans approved in the Ministry from May to September, 2023. 50% of the sample was selected in order to ensure accurate information for predicting ePlanning application for building plan approval processing in Ondo State. The sample size for this study is 138. Random sampling technique was used to select the applicants that submit development applications for questionnaire administration. This technique was adopted to give every applicant an equal chance

of being picked in order to meet the aim and objective of the study.138 questionnaires (50% of the sample frame) were administered to applicants of building plan approved in the Ministry. Interviews were held with the officials of the Ministry to determine the existing process of building plan approval as well as the timeframe of building approval in Ondo State.

FINDINGS AND DISCUSSION

Status tracking of different stages of building plan approval.

Results indicated that majority of client that seek building plan approval in planning Ministry visits the Area Offices to check the status and progress of their application. From Table 3, 60% respondent visited the planning area offices to check their approval status while 2%Request update from officials in the Ministry, 30% chooses others, which include giving consultants to follow up while 8% make phone calls to the area offices to confirm the status of their application.

Table 3: Status tracking of different stages of building plan approval.

S/N	Timeframe	Frequency	Percent (%)
1	Visiting area offices	83	60
2	Request update from officials	3	2
3	Phone call	41	30
4	Others	11	8
	Total	138	100

Source: Field Survey, 2023

Access to internet

From figure 2, it was observed that 96% of the respondent had access to internet facility while 4% percent had limited access to internet service. This gives the impression that, high percentage of the respondent has basic knowledge of ICT.

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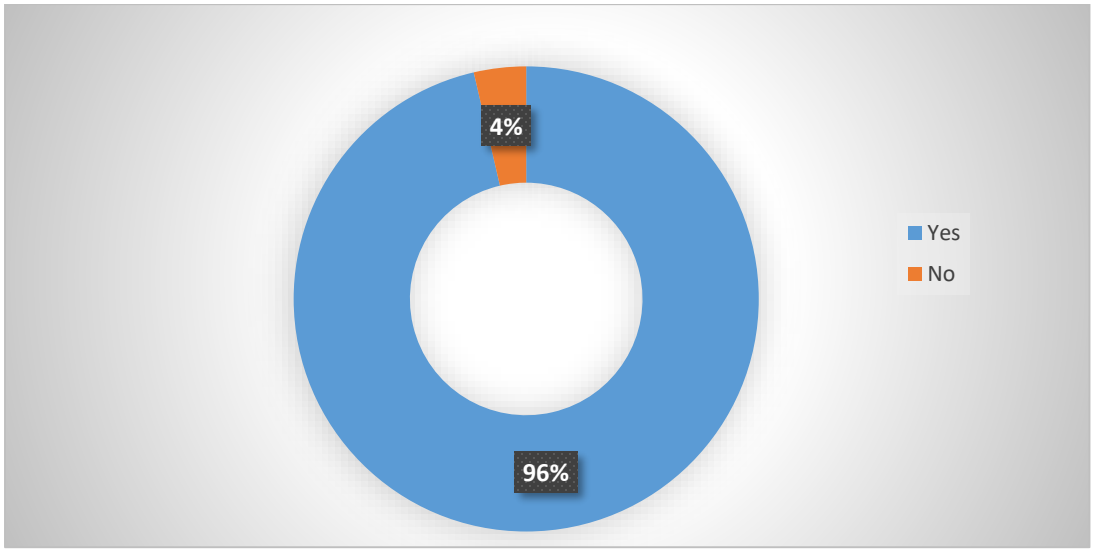

Figure 2: Access to internet service.

Source: Field Survey, 2023

Assessment of Internet facility

From Table 4, the analysis indicated that,those that used internet at home had the highest percentage (51%) and those that use internet at offices was 45%. It was observed that most respondent have a smart mobile phone that they used to access the internet. This implied that, majority of them did not visit the café to use the internet since they can have access to it on their mobile phones.

Table 4: Internet facility assessment

S/N	Variables	Frequency	Percent (%)
1	Home	70	51
2	School	2	1
3	Office	62	45
4	Café	4	3
5	Family House	0	0
	Total	138	100

Source: Field Survey, 2023

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RECOMMENDATION AND CONCLUSION

Recommendation

The results obtained from this study reflect the process of building plan approval in southwest Nigeria, using Ondo State as the case study. In the light of these findings, therefore, the following recommendations are proposed for mitigating building plans approval processes and ensure contemporary approval techniques in the study area.

Advance Planning Approval Model

The Government and officials of the Ministry of Physical Planning and Urban Development (MUPPUD) in Ondo State should have an advance means to get the client that seek to approve their building plan updated regarding the status of their approval. This can be done by upgrading the current online platform for contact details to a dynamic and interactive website. This will serves as a platform for tracking application status and a database for clients and application information regarded as Application Programming Interface (API) for mobile app which can also be developed for various approval activities. The state government payment gateway should be made accessible to the public in order to make payment for building plan approval and other revenue payment online without any intermediaries (bankers).

Citizen Education and Awareness

The citizens need to be educated on the workings of the modified land registration and building plans approval processes. More qualified full time staff, are required to be employed and trained for efficiency to keep pace with the expansion of the city. The management and directors in MUPPUD should be current and make sure that their system is up-to-date with contemporary urban planning database.

E-planning application for building plan approval.

The aim of this study is to develop an e-planning application for building plan approval in Ondo State in order to enhance speedy approval processes. The web application is a platform with several functionalities, which support the submission of working drawing for approval, assessment calculator, online payment gateways, tracking of the status of building plan approval online even from the comfort of home, download of approved and unapproved working drawings. These are presented in figure 3with essential functionalities of e-planning application.

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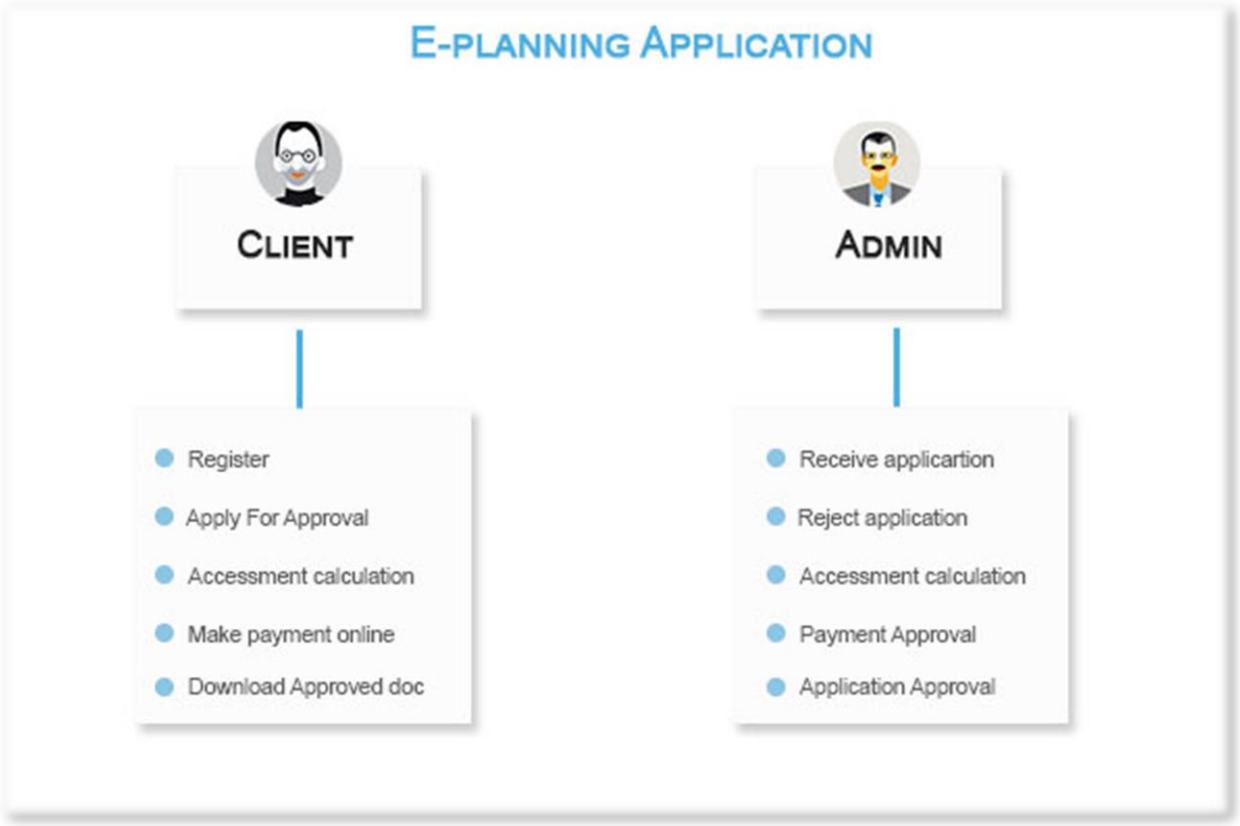

Figure 3: Planning Application Essential Functionality

Building plan approval using ePlanning application

Registration and Login.

Registration page is a page designed for client registration. It contains group of form field which are to be filled. It include full name, location, email address, phone number, type of user, title, username and password to be used to login by the client seeking for approval Figures 4 and 5 shows the user interface (UI) for user registration and login. Login page will redirect client to the dashboard if login credentials is correct.

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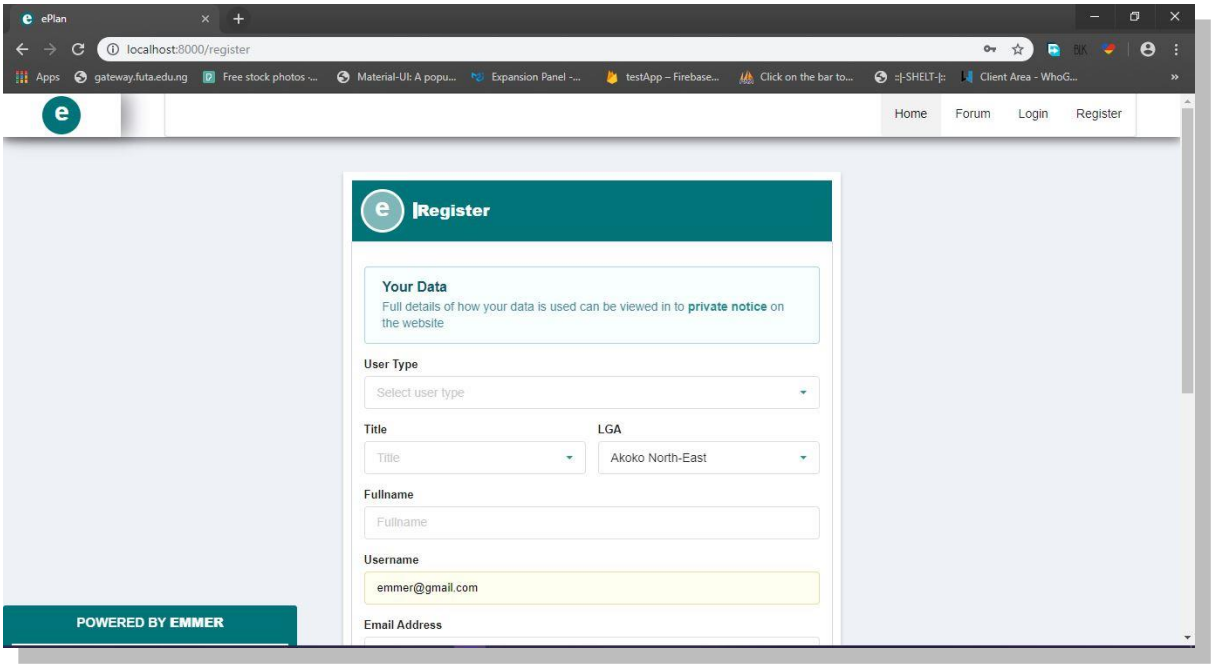

Figure 4: User interface for registration.

Source: ePlanning user interface, 2023

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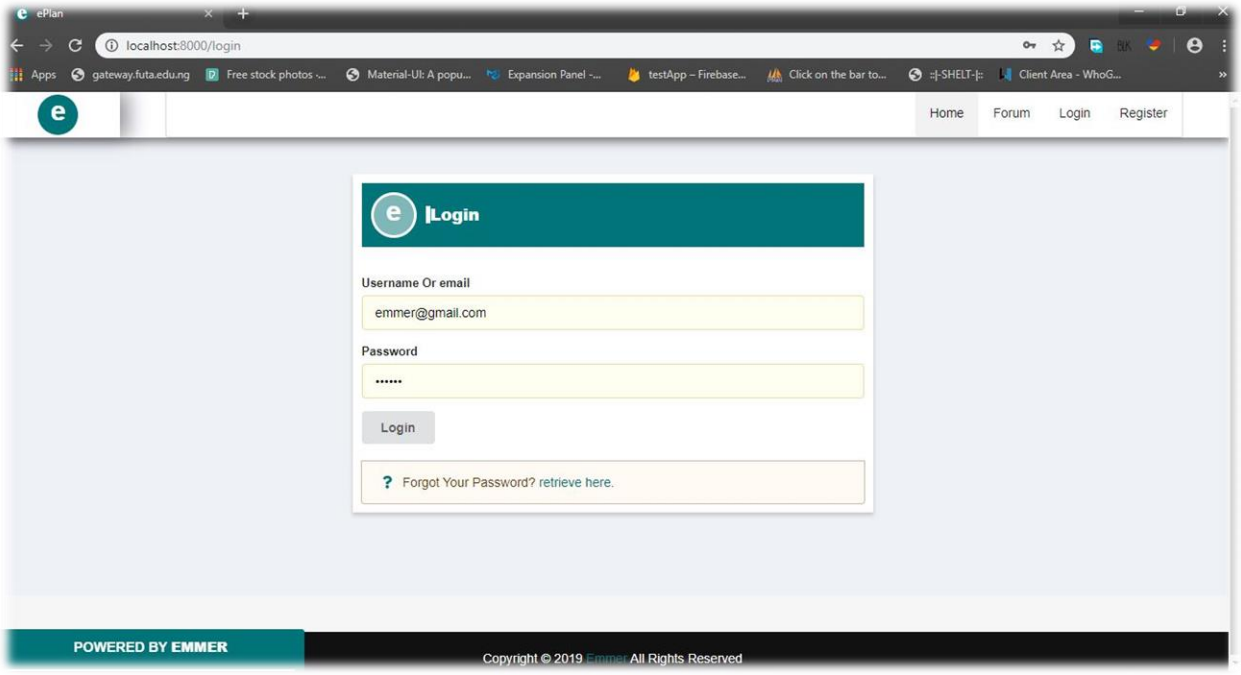

Figure 5: User interface for user login.

Source: ePlanning user interface, 2023

Application for building plan approval

User or client login will redirect the client to dashboard page where the user can edit his or her profile, calculate building plan fee of a building plan using assessment calculator application in the dashboard, view the status of his already pending application, chat system for communication between the client and the officials, view application details and application for new building plan approval. To apply for building plan approval the client just need to click 'apply for building plan approval' by the left side menu and summit after filling the application form and adding appropriate working drawings and other document see Figure 6 and 7. The client will receive a message of successful submission if your request for approval went through.

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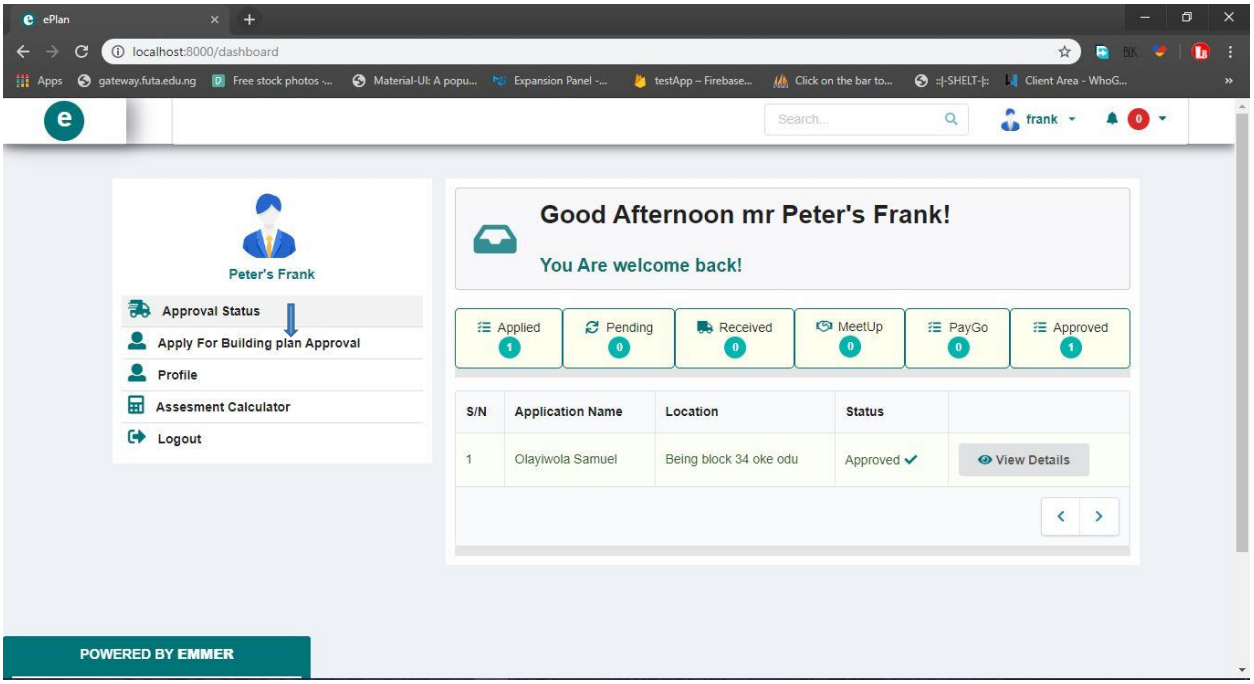

Figure 6: User interface of user dashboard.

Source: ePlanning user interface, 2023

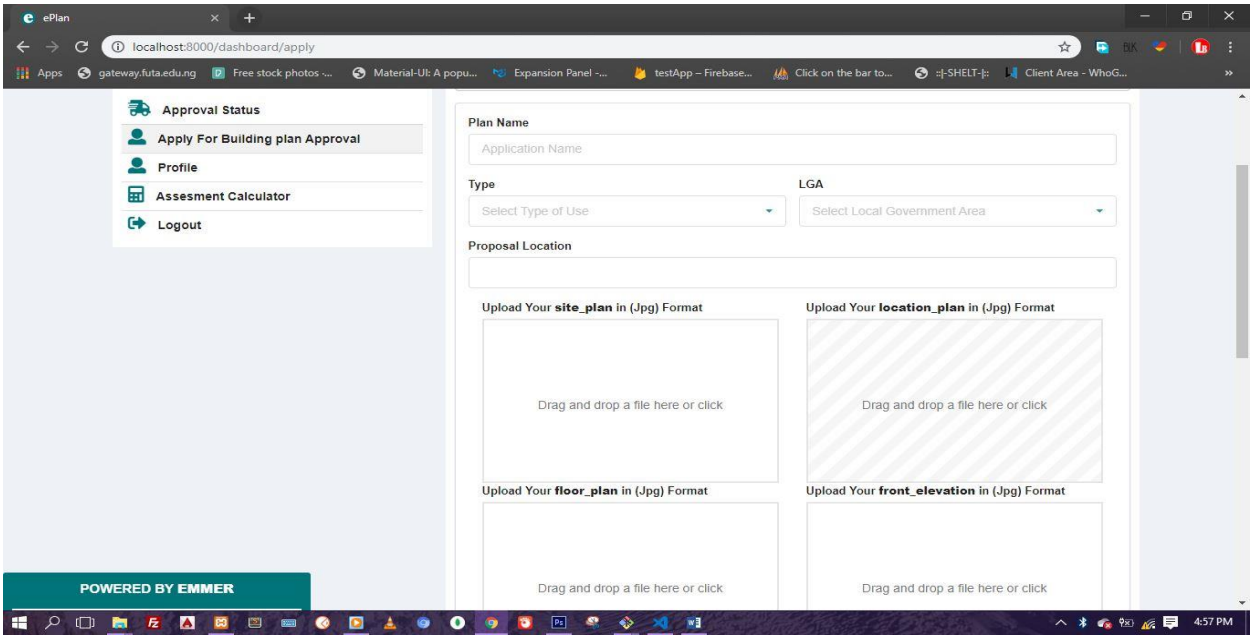

Figure 7: User interface of user dashboard.

Source: ePlanning user interface, 2022

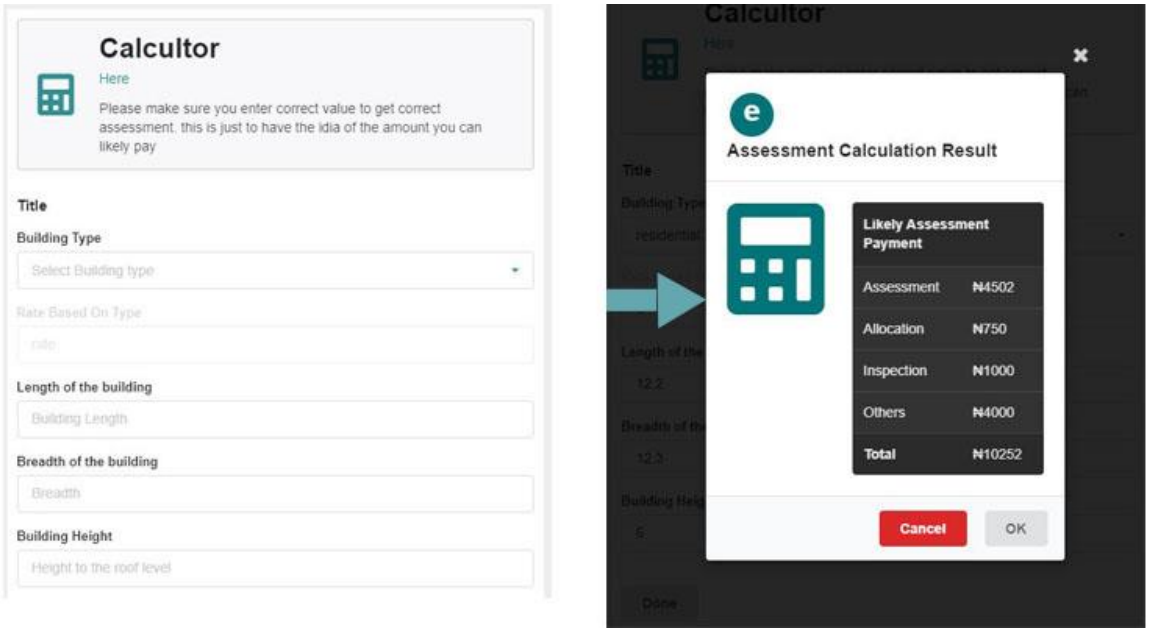

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Figure 8: User interface of assessment calculator and result.

Source: ePlanning user interface, 2023

Keeping track of the application.

Full detail of the application can be seen by clicking approval status and then clicking 'view details' see Figure 9 and 10

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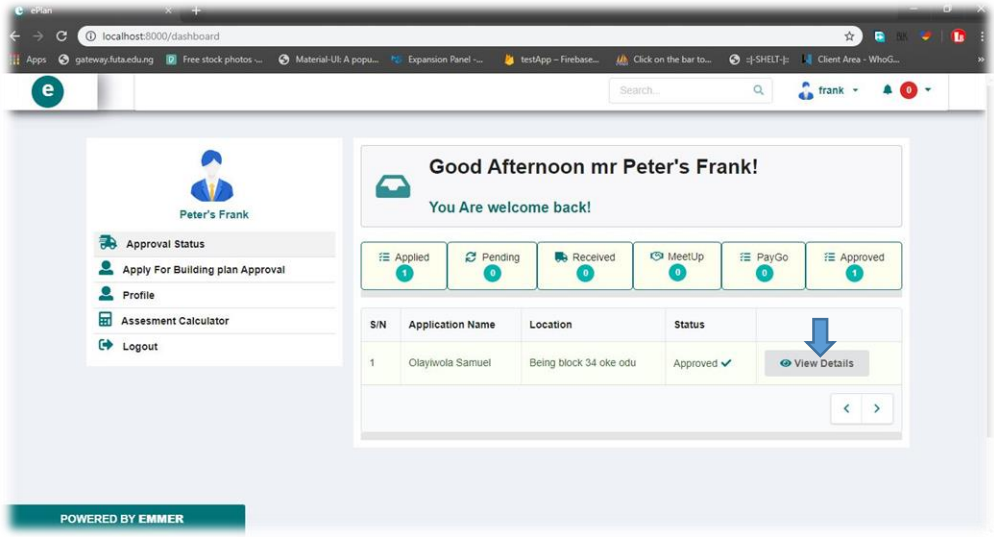

Figure 9: User interface of user dashboard.

Source: ePlanning user interface, 2023

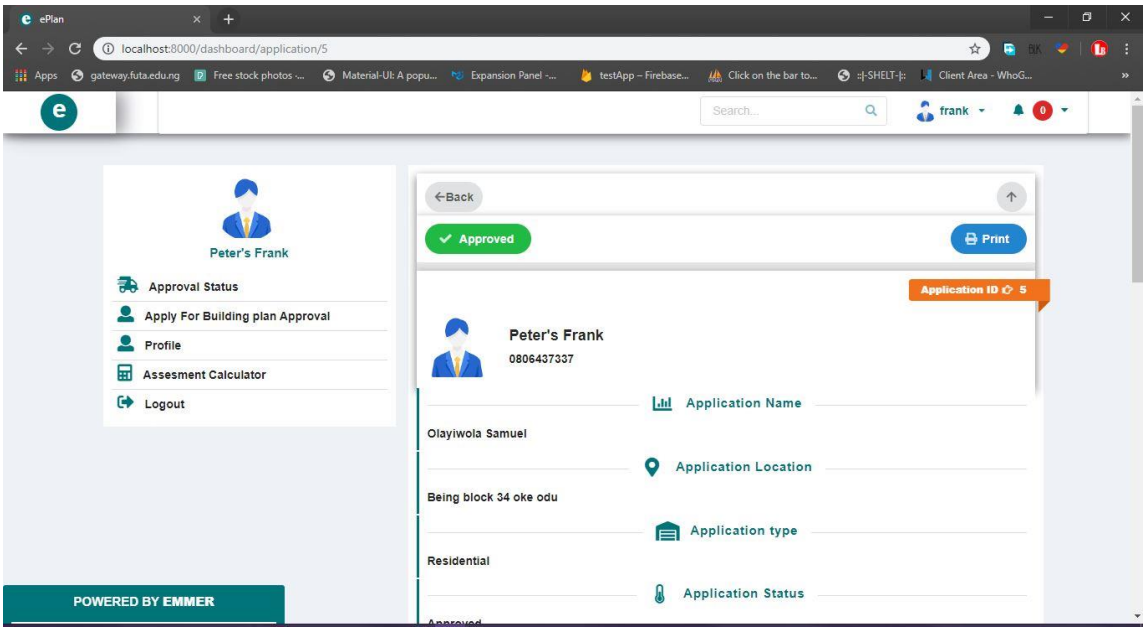

Figure 10: User interface of application details.

Source: ePlanning user interface, 2023

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Inspection stage of approval.

After the client has submitted the application, the admin will get back to the person with the payment to be made to the government and three options of meet up date and time for inspection. The client is expected to pick one of the date that is convenient as shown in figure 11

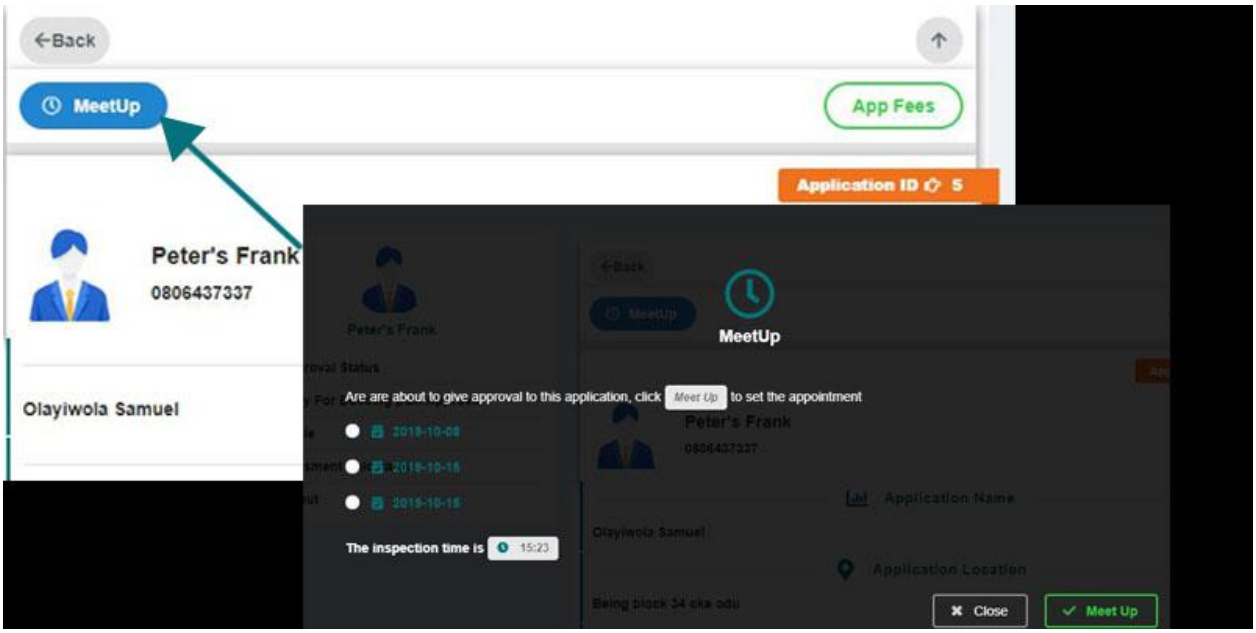

Figure 11: User interface of application meet up.

Source: ePlanning user interface, 2023

Payment for building plan approval.

After the site has been inspected and the application has been proof to be valid by the inspection officers then the admin will approve payment. Payment can be done online and offline. Offline payment will require the submission of receipt received from the bank where the payment was made see Figure 12.

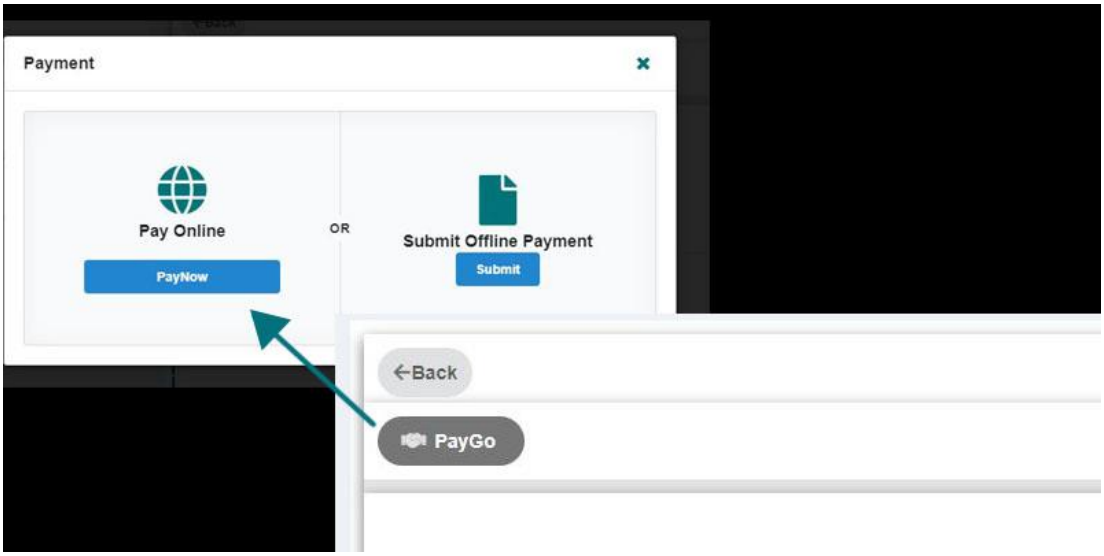

Figure 12: User interface of application payment.

Source: ePlanning user interface, 2023

Building plan approval.

The client's application will be approved after the payment has been confirmed. The client will now be able to download the approved working drawing online see figure 13.

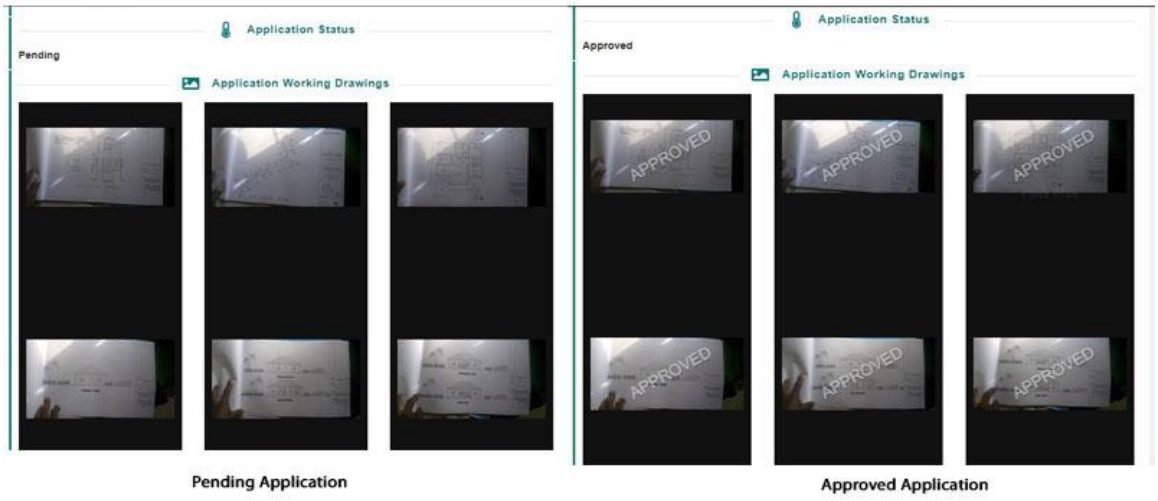

Figure 13: User interface of pending and approved application.

Source: ePlanning user interface, 2022

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Figure 14: User interface of application approved working drawing.

Source: ePlanning user interface, 2023

Admin user interface.

The system has a page for admin login Figure 15 and admin dashboard see Figure 16, where application document and payment can be reviewed, received, rejected, set meet up date for inspection, send messages or chat with client and approval of application with just one click.All application submitted and all users register can be viewed and access by the admin. The admin dashboard is design in a way that roles are assigned to area officers based on each local government i.e. application submitted in Ondo North Local Government (LGA) area can only be approved by area officer in charge of Ondo North LGA.

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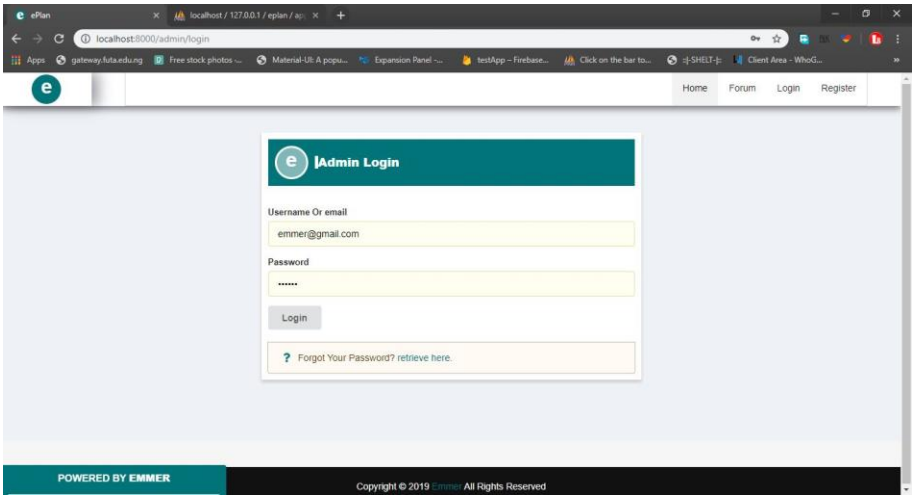

Figure 15: User interface of Admin login.
Source: ePlanning user interface, 2023

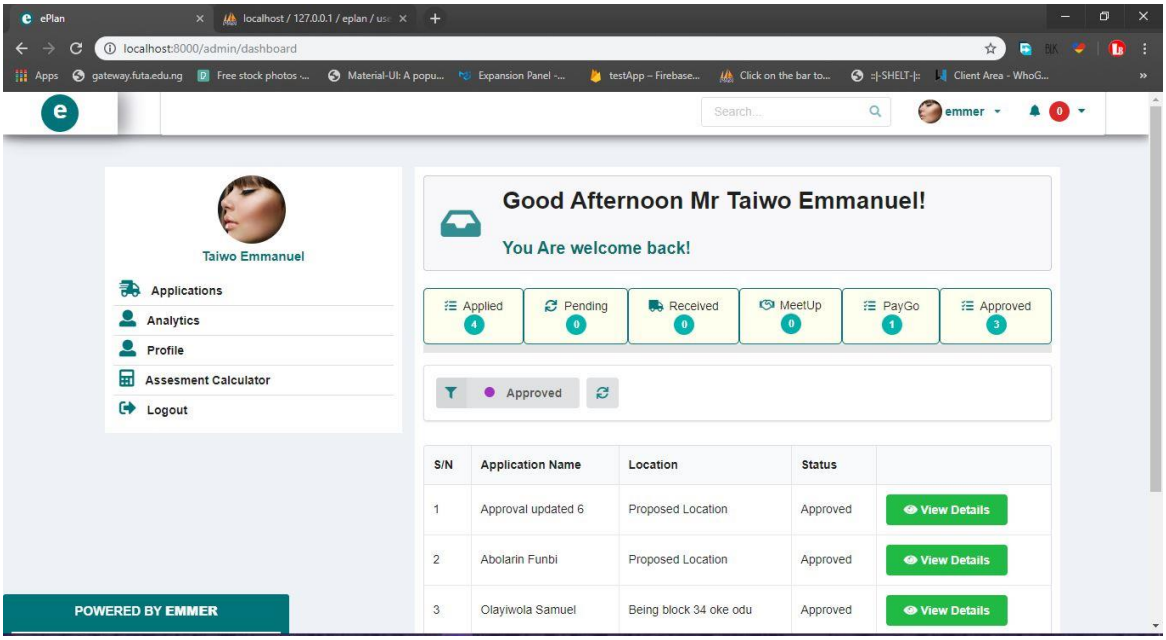

Figure 16: User interface of Admin dashboard

Source: ePlanning user interface, 2023

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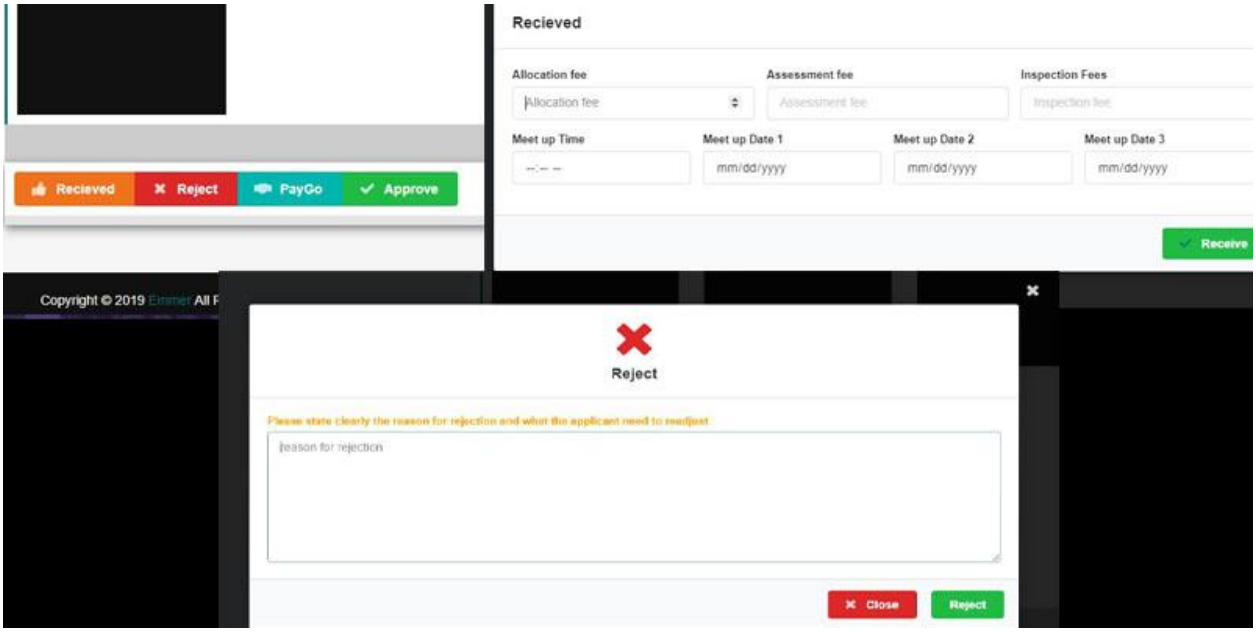

Figure 17: User interface of admin call to action, receive and reject.

Source: ePlanning user interface, 2023

Other User interface

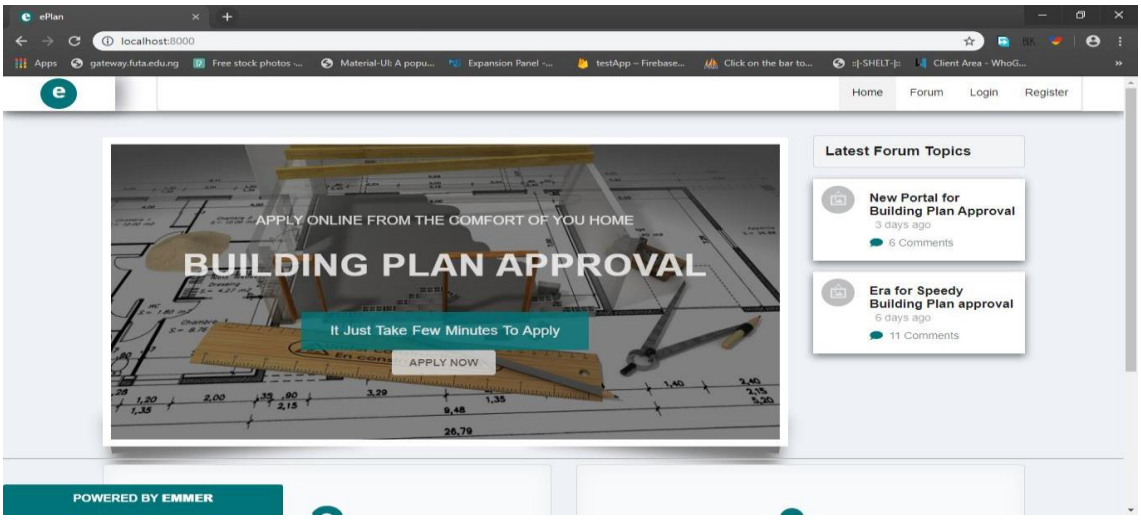

Figure 18: User interface of home page.

Source: ePlanning user interface, 2023

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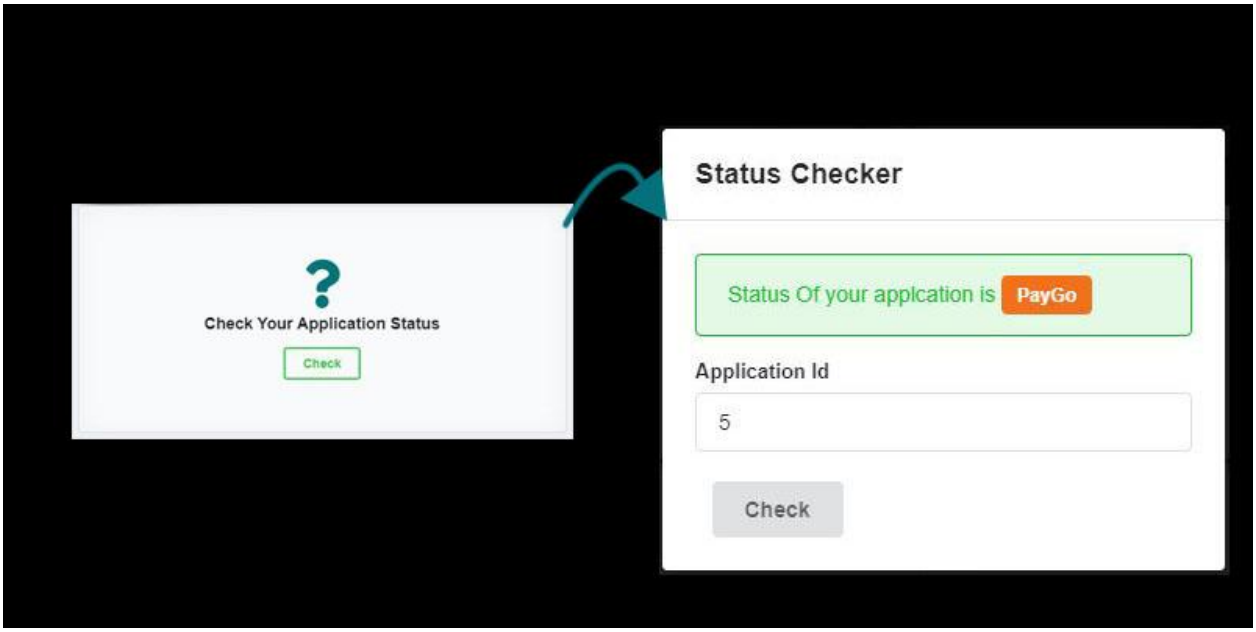

Figure 19: User interface of status checker.

Source: ePlanning user interface, June 2023

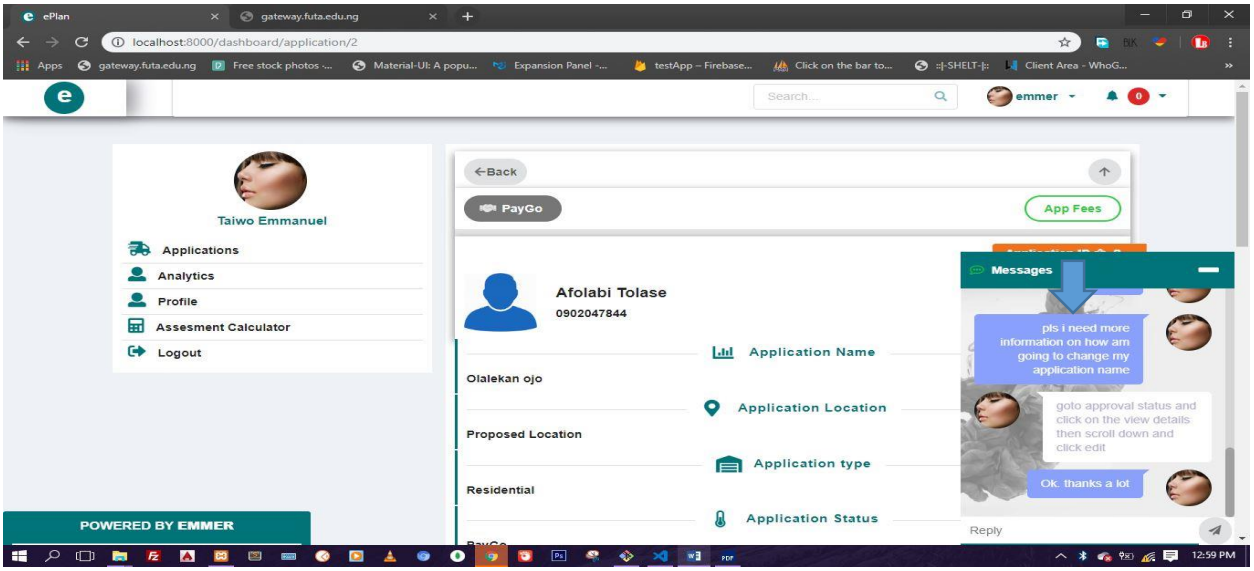

Figure 20: User interface of chat view.

Source: ePlanning user interface, 2023

CONCLUSION

With the rise in the use internet it was expected that ePlanning application could overcome the manually submission in paper format which tend to reduces the effectiveness of building approval in planning ministry and ensure that client that seek for approval of their building plan can do that with ease as well as tracking approval status even at the comfort of their home without them migrating to planning offices to check.

Consequently, this study focused on modernizing the process through the application of e-planning in order to improve speedy approval processes, to facilitating planning activities among government officials and associates and to ensure shared centralized services that are accessible by all. This study addresses the current system by, first, identifying the problems and issues that exist with the current process, access the current trend of engagement of client that seek for approval with internet and making recommendations to address those issues.

If all the recommendations are well address and implemented, the mode of building plan approval in Ondo State will be quicker, easier and users friendly. The Government, stakeholders, private individual and developers need to ensure the computerization of building plan approval for sustainable housing development.

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