Potentials and Barriers to the Use of Smart Contract in the Nigerian Construction Industry

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Purpose: This study adopts the technology adoption model (TAM) which emphasises on the adopters' characteristics to explore the potentials and the barriers for the implementation of smart contract in the Nigerian construction industry.

Methodology: This study employs the qualitative methodology. Seven snowballed ICT compliant construction organisations in the Nigerian construction industry are identified. The construction contract personnel in each of the organisations are interviewed. The data obtained are analysed using the content analysis method.

Findings: There are many challenges in practice that pervade the contractual arrangements in the Nigerian construction industry. The knowledge of smart contract, and the usage in the industry is very low. The dominant barrier to the adoption of smart contract is the "averse to change" culture in the industry, while the years of experience is a strong predictor of construction practitioners' beliefs about the barriers to the adoption of smart contract. Furthermore, there is a relationship between the prospects (optimisms) and the barriers to the adoption of smart contract, while the TAM is a mild predictor of the adoption of smart contract in the Nigerian construction industry.

Implications: The industry culture is an important variable for the adoption of smart contract in the construction industry. The adoption of smart contract can be increased by eliminating the barriers in the industry. There is need for alternative technology adoption model to serve as theoretical basis for the research on the adoption of smart contract in the construction industry.

Keywords: Barriers, Construction industry, Nigeria, Prospects, Smart contract, Technology Adoption Model (TAM)

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INTRODUCTION

Construction contracts are written agreements signed by the contracting parties, which bind them, defining relationships and obligations in the execution of construction projects (Yih Chong, Balamuralithara, and Choy Chong, 2011). Therefore, contractual arrangements in the construction industry include all the processes for the transfer of the responsibilities, risks and incentives of construction activities from the client to the contractor in an agreed manner. According to Aniekwu and Okpala (1988), the objective of contractual arrangements is to optimize the clients' requirements in terms of cost, time and quality. Contract conditions are used to frame the conditions of agreement between the parties in construction contract in a non-biased and equitable manner (Kayastah, 2014). Therefore, a proposed construction work is executed in accordance with the conditions of contract. Usually, the conditions of contract in the construction industry are standardized. The common standard forms of contract include the Joint Contract Tribunal (JCT), New Engineering Contract (NEC), The Fédération Internationale des Ingénieurs-Conseil (FIDIC) and the Public Procurement Act 2007 in Nigeria. The importance of the standard form of contract in the contractual arrangements of construction contracts is to provide a basis for resolution of disputes, enforcement of safety rules as well as assignment of responsibilities to contracted participants (Mahazir and Rakheem, 2015).

Recently, the application of technology to support the process of contractual arrangements in the construction industry is increasing. According to Liu and Zhao (2014), many information technology applications are developed to improve contract management in construction. One of such is the data warehouse which provides data access for references and decision making at the appropriate time during the period of contract administration (Yih Chong et al., 2011). This type of technological application is useful for construction practitioners who are without or with limited legal knowledge to successfully carryout contract administration (Chong et al., 2011). The contract change management (CCM) is an online collaborative tool for ensuring smooth contract change management process under the New Engineering Contract (NEC). Many construction professionals in the UK acknowledged the benefits of the CCM to supporting contract process as it allows them to notify each other as soon as certain conditions become apparent, which may lead to project changes at a later stage (Sun and Oza, 2010). Domashova, Pisarchik and Lifar (2018) developed a technology using PHP 7.1 programming language and MySQL 5.6 to detect overpriced public contracts in a timely manner. Therefore, it prevents corrupt tendencies that lead to disputes in construction contracts.

The application of technology to support contractual arrangements in construction involves the promotion and application of smart contracts. According to Cardeira (2015), smart contracts are computer protocols that facilitate, verify, or enforce the negotiation or performance of a contract, or that obviate the need for a contractual clause. Similarly, smart contracts are transactions that take place between verified parties, and executed by a computer code (Lamb, 2018). The smart contracts use a blockchain technology. This technology enables digital information to be distributed without copying or alteration feature (Wang et al., 2017). In addition, transactions are grouped together in blocks per time and then added to a block of chain that cannot be altered or hacked. This increases data security. In a contractual arrangement, parties can access to the same information in the blockchain per time throughout the project lifecycle (Wang et al., 2017). This eliminates the issue of lack of trust as no one party has more information than the other per time. Smart contracts are embedded with digital currencies in the contract together with a number of conditions that have to be fulfilled before payment (Cardeira, 2015). In essence, the clauses in smart contracts are self-executing (Wang et al., 2017). In sum, the use of smart contracts can eliminate payment/cashflow issues, improve the efficiency in the contract administration process and the elimination of trust concerns in the contractual arrangements in the construction industry.

In Africa, the Nigerian construction industry is a very large one. As at 2017, the value of construction contracts in Nigeria was US$69.1bn, the highest in Africa (Deloitte, 2017). In addition, the country is home to the highest number of contracted construction projects in West Africa, and second highest in Africa, after South Africa (Deloitte, 2017). Despite the size of the construction transactions in Nigeria, the use of the traditional means of contractual arrangement remains dominant. This involves an agreement between a contractor to execute proposed construction projects in accordance to the scope of works provided by the client, and the client in turn, agrees to pay the contractor either a fixed or fluctuating amount for the work done within a fixed or variable period of time. Such agreement is often documented and signed by both parties using either standard or organisational conditions of contract in expectation that a breach will be penalized in accordance with the terms of the contract. However, the traditional means of contractual arrangement for construction projects has been problematic. The existing standard conditions of contract such as the JCT, FIDIC and NEC used for stipulating contract conditions do not adequately reflect the local operating business environment and thus create a severely unfavourable contract conditions in the Nigerian construction industry (Anny, Anthony and Kehinde, 2014). For instance, these standard conditions do not reflect the labour intensive nature of the Nigerian construction industry (Aniekwu and Okpala, 1988). The exception to this are the Public Procurement Act 2007 and the Nigerian Construction Industry Standard Form for Building Projects 2018 which are standard contract conditions developed to reflect the business environment in Nigeria. Nevertheless, the former provides very narrow options for tendering, bid selection and dispute resolution (Olatunji, Olawumi and Odeyinka, 2016), while the latter is still undergoing review and not yet in use.Mudi, Bioku and Kolawole (2015) summed that the issues around the contractual arrangements has made the Nigerian construction industry less favourable for business operations.

In the Nigerian construction industry context, it could be seen that there is need to address the issue of contractual arrangements. This is important because sound contractual arrangements are necessary for the successful delivery of construction projects. Especially in a country with strong potentials for increased contractual arrangements for the execution of different kinds of construction projects onwards (BusinessDay Research & Intelligence Unit (BRIU), 2017). This study is proposing the application of smart contracts for contractual arrangements in the Nigerian construction industry. Firstly, because further research into the implementation of smart contracts in the construction industry is necessary (Cardeira, 2015, Turk and Klinc, 2017). Secondly, because of the lack of any existing study on smart contract in the developing country context. This study will explore the potentials and the barriers to the implementation of smart contracts in the Nigerian construction industry. The Technology Adoption Model (TAM) will be employed to explore the adopters' characteristics that concerns the potentials and barriers to the implementation of smart contracts. As a result, the outcomes can be directly useful and applied by the construction professionals and organisations in the Nigerian construction industry. The outcome will serve as a foundational knowledge to policy makers to know whether, and how to incorporate the use of smart contracts in the contractual arrangements in the Nigerian construction industry. The construction professionals and organisations will also become aware of the barriers they need to overcome to implement smart contracts in the contractual arrangements in the Nigerian construction industry.

LITERATURE REVIEW

The adoption of technology in construction

The technology adoption model (TAM) is perhaps the most commonly used for modeling the acceptance of technologies in construction. The TAM was developed by Davies, Bogozzi and Warshaw (1989). According to Lai (2017), the aim of TAM was to explain the general acceptance of ICT that lead to explaining users' behaviour across a broad range of end-user ICT and user populations. Therefore, TAM is more focused on the adopter's characteristics for predicting the adoption of a system (Habets, Voordijk and Sijde, 2006). The TAM model includes two specific beliefs: perceived usefulness (PU) and perceived ease of use (PEU) (Habets, Voordijk and Sijde, 2006). PU is the potential user's likelihood that the use of a certain system (e.g.: smart contract in the case of this study) will improve his/her actions and the PEU is the degree to which the potential user expects the target system to be effortless (Davies et al., 1989). Simply, and as will be used in this study, the former suggests the potentials, and benefits of using a system to the user, while the latter pertains to the barriers a user faces (or will face) in the usage of system.

Beyond the adoption of ICT only, the TAM is used for explaining the acceptance of wide range of technologies in construction, the commonest being the Building Information Modeling (BIM) (Mathews, Varghese and Mahalingam, 2014). BIM is regarded as the next level of technological development in construction, which employs various support tools and technologies for the generation and management of digital representations of physical and functional characteristics of places (Venkatachalam and Ramanayaka, 2015). Others include green technologies for monitoring environmental footprints and carbon emissions (Foroozanfar, Sepasgozar and Arbabi, 2017), and load bearing masonry for improving the sustainability in buildings (Ramli, Abdullah and Nawi, 2017). The TAM has also been used to assess the acceptance of technological innovations in road construction (Habets, Voordijk and Sijde, 2006, Huang and Huang, 2017). Furthermore, the TAM can be used at the organisational level such as construction companies where technology adoption is a process activity (Sepasgozar and Davis, 2018; Abdullah, Wahab, and Shamsuddin, 2013), and at the industry level for an industry wide overview of the adoption of technological applications (Venkatachalam and Ramanayaka, 2015, Acquah and Oteng, 2018).

It is observed that in addition to PU and PEU, the context where a technology is adopted is a very important influencing factor. In the Unified Theory of Acceptance and Use of Technology (UTAUT), a derivative of the TAM, moderators such as user's age, gender and experience affects the extent of the acceptance of technology (Lai, 2017). In construction, Venkatachalam and Ramanayaka (2015) revealed that externalities such as policies and national protocols affect the acceptance of BIM in construction. Within small construction firms, Abdullah et al. (2013) revealed that the characteristics of the owner-managers such as leadership style, academic qualifications, technological awareness, commitment and passion are strong predictors of technology adoption. This much characteristics may be necessary because the small firms prefer to adopt a more challenging technological innovation (Habets, Voordijk and Sijde, 2006). Organisational attributes such as available facilities, training and support, and readiness play important role in the process of technology adoption in construction (Huang and Huang, 2017). Additionally, cultural change to ensure that technology adopted is applied in the right manner is also necessary for green technology adoption (Foroozanfar et al., 2017), while the previous experience of a user with a technology increases the willingness to adopt the technology (Huang and Huang, 2017).

Previous studies on smart contract in construction.

Wang et al. (2017) described the smart contract as an application of the blockchain technology for maintaining optimal trust in the following ways. The first one is to eliminate payment and cashflow problems. This is possible due to the self-executing mechanism of the smart contract. As stated by Cardeira (2015), smart contract is an efficient mechanism and process to hasten payments between clients and contractors, and subcontractors, to guide against insolvencies in the construction industry. The second one is to improve efficiency in the contract administration process, especially in terms of project duration, due to the automated and unambiguous process. Additionally, Mason and Escott (2018) stated that the use of smart contracts can reduce the amount of paperwork in contract process, and the tendency for disputes. The third one is reshaping the trust behaviour from human trust to a computer coding trust, especially with the self-executing mechanism. Thus, instead of relying on the human trust between parties, which may also include an intermediary such as Lawyers, parties to a contract rely on the self-execution of the smart contract based on the computer codes and instructions incorporated.

In terms of barriers, the use of smart contracts in construction contracts is not yet a common practice in the construction industry (Cardeira, 2015). Even so, the blockchain technology is in the early stages of development (Wang et al., 2017). As a result, many construction contracts do not employ the use of smart contracts. This problem is exacerbated by the "slow to adopt change" attitude in the construction industry (Cardeira, 2015). The construction industry is generally reputed to be averse to changes, especially when compared with the manufacturing industry. According to Wang et al. (2017), the three challenges facing the implementation of the blockchain technology in construction are technical, construction-business and human related challenges. Technically, the blockchain technology uses an extensive amount of time for processing, especially in terms of throughput, latency and size and bandwidth. Similar to Cardeira (2015), the construction-business related challenge suggests the averseness to change from a customary to newer practices. Wang et al. (2017) stated that many construction businesses have invested in the Enterprise Resource Planning (ERP_ systems, making it difficult to transition to the use of smart contracts. The human related challenges refer to identity issues. Project parties feel uncomfortable storing personal and project records in a decentralized manner with a pointer and possible access via blockchain (Wang et al., 2017). The humanistic aspect is very critical to contractual arrangements, especially to foster negotiations and bargaining. Mason and Escott (2018) found that the use of smart contracts will either detract, or enhance this human practice.

METHODOLOGY

It could be seen that the characteristics of the adopters, and the context of the technology, are crucial to the adoption of technology in construction. Regarding technology adoption, the two specific beliefs in the TAM (PU and PEU) suggests the potentials and benefits of using a system to the user, and the barriers a user faces (or will face) in the usage of system respectively. Therefore the aim of this study is to explore the potentials of, and the barriers to implementing smart contracts in the Nigerian construction industry. The qualitative research methodology comprising an interview method of data collection was employed. An interview is a conversation between the researcher and the interviewee to explore issues of interest in greater detail without doubts or ambiguity (Ahmed, Opoku and Aziz,, 2016). Seven construction professionals from different construction organisations in Lagos State were interviewed. Lagos State is the leading technologically driven State in Nigeria (https://www.techproducts.com.ng/top-seven-7-states-leading-technology-in-nigeria/). In order to identify the construction organisations that are strongly open to technological applications, the snowballing sampling technique was used. Initially, two construction organisations with strong technological applications were identified, and subsequently, they referred other construction organisations like them (Atkinson and Flint, 2001). This referencing continued until the last organisation was interviewed.

An interview guide containing 14 specific questions was designed for the interview process. Boyce and Neale (2006) suggested no more than 15 questions per interview guide. The interview guide has a cover page which introduces the motivation and the significance of the study. The interview guide is divided into 5 sections (A-E). The section A comprises of questions about the professional background of the respondents, and about the nature of their businesses. The section B comprises of a question about the nature of contractual arrangements and the associated problems in the Nigerian construction industry. The section C comprises of questions about the interviewees' understanding of technological applications to contractual arrangements and smart contract in the Nigerian construction industry, and how the technology is deployed in their organisations. The responses to questions in sections A-C provide context – which influences technological adoption (including smart contracts) in construction. The section D comprises of questions about the barriers to the use of smart contracts, while the section E comprises of questions about the potentials of implementing smart contract in their organisations. The questions in sections D-E addresses the aim of this study.

As soon as an interviewee is identified (through snowballing sampling), the interview guide was sent, and a period of one week was waited before the actual interview. This was to enable the interviewees to familiarize with the questions, and be able to articulate their thoughts. This process lasted for a period of two months. The actual interview for individual interviewee was no more than 20 minutes per interviewee, and each interview session was recorded using a recorder. Each interview took place in the interviewees' organisations at an agreed day and time with the researchers. Within the 20 minutes period, the researcher asked direct questions from the interviewees. Where responses were not clear, the interviewees were asked to give more explanations to support initial responses. In line with (Bhattacherjee, 2012), the interview data obtained was analysed using content analysis as follows. Firstly, the researchers listened to the recorded data multiple times to make sense of all the responses. Secondly, the researchers transcribed the data into textual form, and concurrently, unitizing them in line with the questions in the sections A-E in the interview guide. Thirdly, the researchers constructed meaningful concepts (or coding) for the unitized texts. That is, the texts that are similar in meaning were combined together with a conceptual naming. Fourthly, the researchers analysed the coded data both quantitatively and qualitatively as shown in the next section.

FINDINGS AND DISCUSSION

Table 1: Background information of interviewees

Interviewees (INT)	Profession	Years of Experience	Registration with professional body	Organisational type	Organisational services	Involvement in contract negotiations
INT 1	QS	30	Yes	Consultancy	QS services	Yes
INT 2	QS	20	Yes	Consultancy	QS, PM services	Yes
INT 3	QS/PM	18	YES	Consultancy	QS, PM services	Yes
INT 4	ARC	4	Not yet			Mildly
INT 5	QS	4	Not yet	Consultancy	BIM	Yes
INT 6	ARC	7	Not yet	Consultancy	Architectural and project development,	Yes
INT 7	QS	5	Yes	Consultancy	QS Services, Arch, Elect, Mech, PM	Yes

As shown in Table 1, the responses of 7 interviewees (INT1 – INT7) were obtained. Four of the interviewees are solely quantity surveyors, while the other quantity surveyor is also a project manager by profession. The two other interviewees are architects by profession. The years of experience of the interviewees can be divided into those above and less than ten years of experience. The former are quantity surveyors, and expectedly, are those who are registered with their professional bodies. The Nigerian Institute of Quantity Surveyors (NIQS) is the professional body of quantity surveyors in Nigeria. The latter are both quantity surveyors and architects, who are not yet registered with their respective professional bodies, except for one (INT 7). All the interviewees work in consultancy organisations. This means they represent the interests of clients in the delivery of their services. The services the interviewees provide are the professional services of the respective professionals. Additionally, INT 2 and INT 3 provide project management services, INT 5 provides BIM services, while INT 7 provides quantity surveying services together with architectural, electrical, mechanical and project management services. Finally, all the professionals have been involved in contract arrangements and negotiations in their organisations on the behalf of clients. The exception is INT 4 who has been involved only mildly.

The interviewees were asked about their opinions on the challenges pervading contractual issues in the Nigerian construction industry. The identification of the challenges is to reinforce the need for the adoption of smart contract in the Nigerian construction industry. The challenges can be divided into those related to trust, national governance, knowledge of contractual issues and contract preparation and documentation. Regarding trust, INT 4 and INT 7 stressed that practitioners are inclined to deny contractual obligations, while INT 6 stated that hoarding of information is a common practice among the practitioners in the Nigerian construction industry. For instance, despite being the biggest client, INT 1 stated that government often does not fulfill obligations to the consultants engaged in construction contracts. This reduces the credibility of the contractual process, and encourages corruption among the construction industry practitioners. INT 1 stated that many construction practitioners lack adequate knowledge of their rights and obligations under a contract. INT 2 stated that contractors do not read the contract documents out of negligence, while most often, the standard forms of contract are not used (INT 3). Without the use of the standard forms, INT 2 stated that contract documents are shoddily prepared, thereby reducing the quality of contract preparation and documentation practice in the industry. In this regard, INT 4 stated that contract documents are rigidly prepared, and inflexible to accommodate changes to scope of work. The interviewees were asked about their knowledge of smart contract to know whether they have experienced the application of the technology for contractual arrangements in the construction industry. It was observed that the interviewees have very low understanding of smart contract, and none had experienced its usage. Instead, some of the interviewees construed smart contract to be either digital construction (INT 2) or electronic contract (INT 2) or BIM (INT 3). Actually, a feature of the smart contract is the use of blockchain technology for the distribution of digital information (Wang et al., 2017). Similarly, BIM is for the generation and management of digital representations in construction (Venkatachalam and Ramanayaka, 2015). Thus, both smart contract and BIM can be regarded as tools for digital construction. Meanwhile, electronic contract is different. It is the contract formed by the interaction of two or more individuals or entities using electronic means such as emails or computer programs. Many of the interviewees (INT 2, INT 5, INT 6 & INT 7) mentioned the use of basic technologies such as emails for engaging in contractual arrangements. Therefore, contractual arrangements in the Nigerian construction industry may be inclined towards the use of electronic contracts, than the use of smart contract.

Given the limited knowledge and the experience of application of smart contract, the interviewees were further asked about the barriers to the adoption of smart contract in the Nigerian construction industry. Meanwhile, the identification of the specific barriers is of less interest in this study. This is conveyed in a previous study (Cardeira, 2015; Mason and Escott (2018)). Instead, and in line with the TAM, the focus is on the interviewees' characteristics that reflects the barriers to the adoption of smart contract. Two characteristics are considered. They are the profession and years of experience of the interviewees. The former is divided into quantity surveyors and architects (INT

6 only), while the latter is divided into those with years of experience greater (INT 1, INT 2 and INT 3) or less than 10 years (INT 5, INT 6 & INT 7). Irrespective of the interviewees' characteristics, the barriers are related to industry culture, legal support, government/client demand and position and level of practitioners' knowledge. Others are related to security issues, availability of infrastructure and education and training. Of these, the industry culture is the dominant barrier to the adoption of smart contract. Interviewees' across the stated characteristics blamed the industry culture which is averse to change from old to new ways of doing things. The interviewees were also worried about the lack of national legislative framework for the adoption of smart contract. INT7 stated that no government policy supports the adoption of smart contract, or related digital solutions for efficient construction.

Meanwhile, no difference is seen in the views of the interviewees who are quantity surveyors and architect about the barrier to the adoption of smart contract. Actually, only one architect's (INT5) view was compared to five quantity surveyors'. The second architect did not respond to this question. This limitation may have affected the result, and thus no conclusion can be made. Regarding the experience characteristic, only the interviewees with less than 10 years of experience specifically mentioned the lack of infrastructure and poor education and training as the barriers. INT5 stated that internet and power supply are very important to the functionality of digital solutions, and the unavailability of these facilities hinder the adoption of smart contract. Actually, Nigeria has a very huge infrastructure deficit, especially the power infrastructure. Many young Nigerians whose aspirations are hindered by the lack of infrastructure echo this dissatisfaction at any opportunity. INT7 also stated that poor education and training is a barrier. Having graduated only about 5 years ago, this interviewee suggests the lack of focus of the built environment education in Nigeria on digital solutions in construction. Therefore, young graduates lack the knowledge and skills to provide digital solutions in the Nigerian construction industry. Currently, no higher institution in Nigeria offers a dedicated degree (undergraduate or graduate) on digital solutions in construction. Compared to UK, INT1 mentioned that the Centre for Digital Built Britain is a dedicated education and research centre to advance digital practices in construction. It is also common knowledge that the government in UK has mandated the adoption of BIM level 2 to all public projects from 2016. In sum, the principle of TAM that adopter's characteristics predict the adoption of a technological system appears to be supported in the barriers to the adoption of smart contract. This study revealed that the interviewees with less than 10 years of experience stated the barriers of lack of infrastructure and poor education and training to the adoption of smart contract in the Nigerian construction industry. Those with more than 10 years of experience did not state these barriers.

Finally, the interviewees were asked to state optimisms for the adoption of smart contract in the Nigerian construction industry. Similar to the barriers, the focus was not on the identification of these optimisms. In line with TAM, the focus is on the interviewees' characteristics that reflects the optimisms to the adoption of smart contract. Irrespective of the interviewees' professions and years of experiences, they are all optimistic about the adoption of smart contract in the industry. However, no significant differences were observed in their views about specific areas of optimism for the adoption of smart contract. Meanwhile, it appears that addressing the barriers earlier identified is the basis for the optimism about the adoption of smart contract among the interviewees. For instance, the "averse to change" industry culture is the dominant barrier. Seemingly, changes to this culture is the dominant basis for optimism for the adoption of smart contract. Both INT 5 & INT 6 suggested that the industry needs to be open to digitalization ideas, while INT7 suggested that the adversarial and fragmented relationships among construction practitioners need to be eliminated. Other bases for optimism that are associated to the barriers to the adoption of smart contract are increased academic and professional education and training (INT 1 & INT 5), and greater government role through legislations and policies (INT 2 & INT 4). Furthermore, INT 1 & INT 3 are optimistic because change is inevitable, and they believe that the current digital revolution will become reinforced in construction with time. In sum, the principle of TAM that adopter's characteristics predict the adoption of a technological system appears to not to be supported in the optimisms to the adoption of smart contract.

CONCLUSION

This study adopts the technology adoption model (TAM) which emphasises on the adopters' characteristics to explore the barriers and the potentials for the implementation of smart contract. The traditional means of contractual arrangement for construction projects is very dominant, but creates severely unfavourable contract conditions in the Nigerian construction industry. Hence, this study was carried out in this country. In addition, with the high infrastructure deficit in this country, there are strong projections for the increased infrastructure project developments which will require improved contractual arrangements. Theoretically, there was need for this research because the lack of existing study on smart contract in a developing country context. Therefore, the following conclusions are made.

1. There are many challenges in practice that pervade the contractual arrangements in the Nigerian construction industry. These challenges are systemic and reflect how a nation or a sector operates. These challenges are those related to trust, national governance, knowledge of contractual issues and contract preparation and documentation.
2. The knowledge of smart contract, and the usage in the Nigerian construction industry is very low. However, there is a good awareness of digital construction, and the industry is only at the stage of application of electronic contracts for contractual arrangements.
3. The dominant barrier to the adoption of smart contract is the "averse to change" culture in the Nigerian construction industry. Meanwhile, the years of experience is a strong characteristic determinant of the barriers that a construction practitioner believes can prevent the adoption of smart contract in the Nigerian construction industry.

4. There is a relationship between the prospects (optimisms) and the barriers to the adoption of smart contract in the Nigerian construction industry. Addressing the barriers the basis for the optimism about the adoption of smart contract in the industry.
5. The technology adoption model (TAM) is a mild predictor of the adoption of smart contract in the Nigerian construction industry.

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BIOGRAPHICAL NOTES

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