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Construction Project Crowding Strategy: Conceptualizations, Indicators and Empiricisms

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Abstract:

With increasing theoretical and practical interest in crowdsourcing and crowdfunding strategies, no eclectic review of the concepts as an integrated whole have so far appeared in real estate-based research. The field lacks a clear and vivid conceptualization of a unification of the concepts as a project delivery strategy. The study therefore reviews literature with a view to ascertain the strengths and weaknesses of this literature stream. The review is based on articles published in indexed journal databases and qualitative data collected from the review was subjected to Scissor-sort analysis. The findings show that no nomenclature exists for an integrated crowdsourcing-crowdfunding platform. The study filled this gap with the development of the Construction Project Crowding concept, and further went ahead to conceptualize the term. This conceptualization provides a detailed description of a crowdsourcing-crowdfunding unification strategy for sustainable delivery of affordable public housing projects in developing countries. Recommendations were made on future construction project crowding research directions.

Keywords **— Crowdsourcing, Crowdfunding, Construction Project Crowding, Public Housing Delivery, Housing Deficit.**

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I.   INTRODUCTION

There exists a consensus in pedagogy and practice of the huge capital outlay inferences of real estate and construction projects. As the inevitability of real estate project financing burden is not contended, from a global perspective, it also appears that the burden is greater for emerging economies like Nigeria. [1] cited the physiognomies of real estate project financing in Africa with the extrapolation that only a trifling 3% of Africans can afford a mortgage, while an estimated 65% of the continent's urban population is deprived of formal settlement due to high occupant affordability ratios.

A juxtaposition of this finance burden with already existing challenges of attaining sustainability in real estate project delivery presents grim reading for these economies. Already, the culpability of the construction industry as a significant global warmer [2] and the paucity of green designs and buildings in Nigeria posit that a diffusion of innovation through concept outsourcing remains fundamental. Given the economic implications of real estate investment and development, the criticality of finance and sustainability of construction projects has engaged the attention of scholars and practitioners across the

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built environment domain in recent years. A significant outcome of this attention is the broaching of the efficacy of project crowding as a problem-solving and corporate planning strategy for project success.

In several sectors of the global economy, notably in Information Technology, manufacturing and industrial engineering sectors [3], project crowding has provoked the utilization of two major dimensions in the form of crowdsourcing and crowdfunding [4;5]. Existing commentaries on project crowding has identified the phenomenon as a solution-driven avenue for concept and capital generation. Clues to the socioeconomic unsustainability of construction projects in developing countries are imperative to a review of the potency of this phenomenon.

In Nigeria, attention has only recently been drawn to the crowdsourcing and crowdfunding dyad with a paucity of empirical depth. The situation begs the question on the conceptuality of project crowding by Nigerian scholars, the Critical Success Factors in the country, and the empirical perspective. It is on this note that the study conducts this eclective review with a view to determining extant lacuna in the project crowding literature emanating from the country. Most importantly, there has been no holistic approach to present the dominant project crowding conceptuality, CSFs and empiricisms in Nigeria. The study seeks to fill this gap.

II. REVIEW

The review provides the foundation for the research questions through an incorporation of construction project crowdfunding and crowdsourcing research. The aim is to set a research agenda through the identification of areas needful of an injection of scholarly contribution that enhances literature and practice of construction project crowding strategy in Nigeria. In consistence with the research questions, the review examines the construction project crowding conceptuality, CSF indicators, and empiricisms.

A. *What is Construction Project Crowding?*

A compendium of project crowding studies indicates an agreement on a two-dimensional approach that fulcrums on crowdsourcing and crowdfunding drives. Despite this agreement, attempts at elucidating and applying the crowdsourcing and crowdfunding concepts have been broad [6]. Understandably, this broad perspective of the duo has been censured on the recency of both phenomena, prompting a scholarly approach to their empiricisms from a phenomenon-based approach that involves the development and differentiation of the concept [7]. We follow this recommendation with an independent analogy of both concepts. First, we go with crowdsourcing.

1. Crowdsourcing

Lending credence to the lack of solidity that underlines the theoretical base of crowdsourcing, [8] hinge the disintegrated definitions of crowdsourcing to its adaptability. This adaptability has categorized crowdsourcing in various forms as "collective intelligence system" [9], "phenomenon of … developed, designed, serviced, or processed user-generated content" [10], "a source of innovation" [11], "co-creation platform" [12]. Other crowdsourcing variants offered by scholars include "intelligent problem-solving leverage" [6], a "micro-tasking, information pooling, broadcast search, and open collaboration platform" [13], "legitimate IT-enabled form of problem solving" [14].

Indeed, what can be gleaned from this conceptual presentation of crowdsourcing is a disconnect amongst scholarly elucidations of the concept. This perceived disconnect was also detected by [15] with the assertion that with its exponential growth, the crowdsourcing concept continues to undergo variations that aggravate the identification of a dominant conceptuality. From the following compendium of crowdsourcing definitions, it is becoming obvious that [8] position on the adaptability of crowdsourcing to different industries is culpable for this disaggregation. For instance, [11] view crowdsourcing as the outsourcing of innovation by a project manager towards improved

performance. There is need to stress however, that this definition may be found to be lacking depth as it does not indicate the source of the innovation, as innovation can also emanate from consultants to the project and not necessarily a designated crowd.

Our position finds support in the work of [16] who describes crowdsourcing as the utilization of an enthusiastic crowd by an organization for problem-solving tendencies. While this view differentiates the innovation source from that offered by the consultant, it still does not delineate who the enthusiastic crowd is, and how they can be reached. In what might be deemed a response, [17] identifies the crowd as those relevant to organizational operations, who can be reached through an "open call" model. [18] provides greater insight on the identity of the crowd in crowdsourcing with the reference that they constitute the customers of the organization, in our case, the beneficiaries of the project. In other words, we begin to form a narrative of crowdsourcing as the tracking and integration of project recipient ideas in the conduct of the project.

Extending the narrative by [17] on crowd-tracking using 'open call', [16] argues that several applications of crowdsourcing occur on online platforms. This position echoes [5] assertion on crowdsourcing as a strategic online model for attracting business solutions that transcend organizational ideas from interested and capable individuals. The implication of this assertion is that the crowd is not just delineated as customers or beneficiaries but those who possess the capabilities and competencies of offering innovative input towards the successful outcome of the project. As we begin to form a crowdsourcing notion from the foregoing, examining its conceptualizations from a Nigerian perspective presents a paranomic view.

Therefore, filling in the gaps from a Nigerian perspective, [19] define crowdsourcing as "the mobilization of the public, the crowd, to perform and integrate small, incremental tasks into significant project goals". It refers to "an accurate and reliable data collection means through automated mechanisms from a network of collaborators that differ from the traditional internal modalities" [20]. It is easily clear that this view portrays the significance of crowdsourcing as a fresh and objective insight into efficient project management. However, the successful procurement of this insight is a function of the level of crowd motivation [21]. The paper goes on to aver that crowdsourcing is the process of procuring service-oriented information from a group of people in an online community rather than the traditional way of making information available to service providers [21]. Obviously, this view has similarities to [20] in its recognition of crowdsourcing as a variant of innovative insourcing.

These expositions on the merits of crowdsourcing in complicated projects bring it in close proximity to real estate projects, and since the conceptuality of crowdsourcing depends on its adaptability to the scholar's background, our view will also align it towards real estate projects. Crowdsourcing is "deemed particularly useful for tasks requiring a large number of viewpoints, and at the same time, easy to perceive by the public.

This characterization conforms with the delivery of public real estate projects. The significance of this conformity is found in the trivial adoption of market-oriented polycentric management philosophies in public housing delivery in the country [22]. From these conceptual submissions on crowdsourcing, a common theme does appear which summarizes real estate project crowdsourcing as the effective delivery of construction projects through the application of online initiative outsourcing.

Prior to an eclectic operationalization of the crowdfunding conceptuality, a background of the concept is pertinent. We take this overview from the work of [17] which identifies earlier nomenclatures of crowdfunding as peer-to-peer lending and social lending. The study posits that such activities emanated from inadequate Small and Medium Scale enterprises support, in spite of their prospects for economic growth and development. This argument is equally pronounced in the Nigerian sphere as inadequate financing has been

also identified as the bane of sustainable housing delivery [1]. Therefore, with more expositions on the crowdfunding concept and strategy, the deficit situation in public housing delivery may be attenuated. First, a delineation of the concept is essential.

[23] define crowdfunding as a "new form of financing that allows people or businesses to seek small amounts in the form of donation, loan or investment from large numbers of people rather than large amounts from a few". However, this position differs slightly from several crowdfunding expositions. This is due to its omission of the online facet of the concept. Lending credence, [21] argues that crowdfunding is the facilitation of lending to businesses on an online platform. With expositions as this, we are inclined to believe that the with the steady evolution of social media, interest in crowdfunding as an online platform for project capitalization is bound to increase. This is in consistence with the views of [20] which delineates crowdfunding as the augmentation of project funding through the process of borrowing from designated online community.

While the online facet of crowdfunding has been provided by these later analogies, there still seems to be an element of feeling which calls attention to their uncomprehensive nature, due to the negation of an endgame to the adoption of crowdfunding. In other words, why do organizations request crowdfund? We ask this question because it may seem myopic to settle on the rationality that crowdfunding is just to raise funds. [23] present an outlet with the submission that engaging the crowd to fund a project, also automatically enlists them to contribute ideas towards the successful outcome of the project. In addition, [22] assert that crowdfunding extends the project investment scope by creating shareholder obligations for capable customers. In their take, [20] opine that it leads to reduction in capital formation time through stakeholder contribution. From these submissions, we form a conceptual idea of crowdfunding as the capitalization of a project through online-based external funding activity.

With these conceptualizations of the crowdfunding and crowdsourcing concepts as the capitalization of a project through online-based external funding activity, and the effective delivery of construction projects through the application of online initiative outsourcing respectively, [23]'s submission evokes a critical thought and exposes a gap in extant literature. Recalling their assertion, [23] deliver an amalgamation strategy that sees individuals and organizations going for a combined crowdfunding-crowdsourcing strategy. Several eclectic reviews would reveal that scholars usually conceptualize the two concepts as separate constructs, without much attention devoted to conceptualizing them as one. We readily admit the role of [23] in broaching this discussion, but equally recognize their lack of action towards broaching a nomenclature for crowdfunding-crowdsourcing unification. We go further with the introduction of the Construction Project Crowding concept.

Our adoption of this novel nomenclature for combined crowding delineates an organizational strategy which utilizes crowdfunding and crowdsourcing as one. To conceptualize our concept, construction project crowding, we conduct a Scissor-sort analysis of submissions on both concepts as separate constructs with a view to a crucial identification of key crowdfunding and crowdsourcing constructs. From this analysis, the following constructs emanate:

i. Online platform
ii. Co-creation
iii. Solution-driven
iv. Initiative outsourcing
v. Capitalization
vi. Efficiency

First, we identify the online physiognomy of the concept. Secondly, it is a co-creation strategy which outsources innovation and funding obligations of the organization to an online community which enables them to joint developers of the business idea or project. Of course, it is solution-driven because it exists to fill innovation and funding gaps of enterprises. We have echoed several times in this paper, the critical position of public housing

delivery in Nigeria in attenuating the over 17 million housing deficit in the country. Our project crowding strategy integrates the initiative outsourcing fulcrum of crowdsourcing with the capitalization outsourcing foundation of crowdfunding towards efficient delivery of project goals. From this, we develop a construction project crowding conceptuality as the online tracking and integration of stakeholder-generated resource for efficient project delivery.

With this conceptualization, a number of pertinent questions prop up, which we outline as follows:

III. RESEARCH QUESTIONS

1. How is construction project crowding conceptualized?

2. What are the CSFs of construction project crowding in Nigeria?

3. What are the extant gaps in construction project crowding literature?

IV. METHODOLOGY

To address these research questions, we conducted a Qualitative Exploratory Research Design which employed an eclectic review of crowdfunding-crowdsourcing related literature. Our approach involved semantic investigations on indexed databases angled upon an identification of construction project crowding taxonomy or research across diverse disciplines and professional fields.

V. FINDINGS

1.Conceptualization of Construction Project Crowding

Initially, our search produced results for an entirely different conceptualization of project crowding. These results depict project crowding from the transportation perspective as ratio between vehicle occupancy levels and travel time [24]; and from construction perspective as an antithesis of spatial mapping in project simulation. Obviously, this is far from the foregoing of our discourse, and thus confirms the novelty of our construction project crowding conceptualization.

2.CSFs of Project Crowding

Given the numerous prospects of crowdsourcing and crowdfunding, it is indeed no surprise that nations in both global north and south have all profitably adopted them in the predevelopment and post development stages of projects, cutting across all sectors of the construction industry. A vital ingredient for a project crowding strategy through the effective integration crowdsourcing and crowdfunding is Web 2.0 internet technologies which enables the adaptation of social media platforms for such designated purposes [25]. The social media aspect of this ingredient is pronounced by [20] who argue that the widespread tentacles of social media make it a requisite platform for crowding awareness creation.

However, the success of social media as a project crowding platform cannot be termed a given without certain pertinent considerations. [25] cite the pertinence of the founder's personal social networks, in-group/cross-group social networking effect and communications management. In crowding parlance, especially crowdfunding, the founder is the individual or organization requesting the assistance from the online community, while the funder or backer is the entity within the online community who provides the assistance. In addition to the social networking demography, founder information such as background, contact, education, experience is also critical to the accessibility of backers for the project [26].

Aside the background of the founder, another critical success factor seems to be the project background. [25] aver that practical and theoretical evidence posit that funders and backers have a high tendency of backing projects with a social or non-profit oriented background. The reason presented for this preference is that projects with such backgrounds possess high realization prospect, and seem more credible that profit-oriented organizations. Lending credence, [20] argues that this provides ample opportunity for a harmonization of crowdfunding and social entrepreneurship. One such social entrepreneurship project from the public perspective is the delivery of social or affordable

housing to attenuate the housing deficit in the country.

Successful crowding strategies enlist visual techniques such as technical drawings and prototypes for construction projects, to convey the project scope and goal in graphic terms to the supporting community. The use of such visual techniques bridges any understanding and appreciation obscurity that may exist between founders and backers and further stimulates the interest of backers [25].

Trustworthiness and proximity of founders are other crucial indicators of successful project crowding. [26] illustrate proximity from the angle of friends and family, while [1] see it from the perspective of geographical proximity. The issue of geographical proximity lends credence to our integration of trustworthiness. This is angled on the argument that the farther the organization from the backer, the possibility of lesser trust and vice versa. However, [25] offer a different take with the contention that previous successful crowding experiences usually trump geographical proximity.

From the perspective of the study, since the focus is on delivery of affordable public housing, government can be perceived as being creditable enough to enhance backer trust, in spite of geographical proximity.

3. Gap in Literature

From the review, most studies available to the researchers on the CSFs of crowdfunding and crowdsourcing have come from mostly developed countries, and the few indigenous studies that have focused on the concept have not considered its applicability in construction projects. Indeed, what can be observed from the review is the fact that the construction industry in developing countries such as Nigeria still loom in the dark in this regard, despite the huge potentials of benchmarking these project crowding strategies. Inadequate number of preceding indigenous studies have formulated any construction project crowding conceptualization or operationalization framework, more so, one that can

be applied to the delivery of affordable public housing units.

VI. CONCLUSION AND RECOMMENDATIONS

The study concluded that no nomenclature exists for an integrated crowdsourcing-crowdfunding platform, nor any identified conceptualization of any such concept. To fill this gap, the study therefore conceptualizes a construction project crowding strategy as the online tracking and integration of stakeholder-generated resource for efficient project delivery. This resource can be a combination of capitalization and ideas for efficient project delivery, and the study recommends the establishment of such integrated platforms in the Nigerian real estate industry.

The study also concluded that research on project crowding as a unified concept is inadequate, especially from a Nigerian perspective, and thus recommends that more research in this area is pertinent with a view to learn the empirical realities of adopting such strategy in the Nigerian real estate industry. It is argued that commitment to these recommendations may open up new insights towards the attenuation of the public housing deficit in the country.

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