

Exploring Challenges of Adopting Sustainability Assessment Methods in UAE - Perspectives of Project Professionals

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ABSTRACT

UAE's sustainable construction industry is expanding with increased interest in promoting green buildings while addressing global environmental concerns. However, it has been established that the effectiveness of implementing building environmental sustainability assessment methods varies significantly with several variables. While, a substantial body of literature has focused on the development of rating systems, less is known about the barriers and challenges of adopting the current assessment methods in the UAE; Pearl Building Rating (PBR) and Al Sa'fat systems. This paper addresses this gap through semi-structured interviews exploring the perspectives of 5 senior project professionals who acquired first-hand experience with the incorporation of sustainable construction practices in UAE. Based on the findings, adoption-enhancing suggestions such as project management software, awareness-raising strategies and government initiatives are recommended. This paper contributes to the growing literature on the adoption of energy assessment tools and specifically increases knowledge on current UAE sustainable development.

INTRODUCTION

Building rating systems are used as a method of assessment that defines certain objectives aiming to evaluate the environmental performance of buildings using categories, scoring system, weighting and output (Bernandi et al., 2017). Depending on the best practice of the users and experts considering context, available resources and the climatic conditions that the rating system will be used in which makes it an ever evolving process (Khogali, 2016). The general goal of building rating systems is to improve building operational performance in a way that minimizes their environmental impacts (Awadh, 2017). In this regard, the success of the environmental assessment method adoption is identified by the way it is adopted in the construction industry instead of the number of certified projects (Cole, 2005). Moreover, in order to understand the role of assessment methods as innovation and market changer, it is paramount to understand the processes and dynamics of sustainable development projects, in addition to the challenges facing sustainability adoption.

This paper explores the challenges of adopting building environmental sustainability assessment methods in the United Arab Emirates (UAE), on the basis of literature review and semi-structured interviews with project professionals. The significance of this study lies in the discussion that mirrors the current challenges expressed in the interviews with the possible actions needed in order to optimize the process of adoption. In order to study the adoption of environmental rating systems in UAE, we must first demonstrate the UAE's current rating systems, In November 15th, 2010, the Abu Dhabi Urban Planning Council (UPC) formally launched Estidama system (Municipality of Abu Dhabi City, 2011), which means 'sustainability' in Arabic, the first system of this type created especially for the Middle East region. Dubai municipality also released "Al Sa'fat" rating system in September 2016 aiming to acquire a sustainable city by 2021. Al Sa'fat is an Arabic word means the date palm fronds reflecting the traditional construction material that was used for roofs in the old Emirate's houses keeping cool interiors (Saseendran, 2016). Other international rating systems are also used on a wide scale in the UAE, such as LEED and BREEAM.

The aim of this research is to investigate challenges faced during the adoption of assessment methods in development projects for the UAE built environment. The paper is organized as follows: The following section demonstrates a review of literature that outlines the challenges of sustainable assessment methods adoption established by previous studies and classified to market, organization, and project-related challenges. That is then followed by an outline of the qualitative methodology used in the form of semi-structured interviews and thematic analysis, and a presentation of results and discussion of the two main findings of integration and clients' awareness challenges. Finally, the paper concludes with outlining the limitations of the current study and suggestions for possible future studies.

LITERATURE REVIEW

A review of related literature revealed a substantial body of knowledge that focuses on the global challenges of building rating systems adoption, however, the knowledge remain lacking in the Middle East region and with the recently launched rating systems. The challenges established in the literature can be classified into market, organization, and project-related challenges which is to be discussed in the following sections.

Market Challenges

The market may intentionally or unintentionally create barriers to green development practice. The barriers found by Choi include knowledge gaps in green development quantification, communication shortfall, ownership structure and operating cost responsibility, funding issues and risks and process issues (Choi, 2009). According to Opoku and Ahmed, clients need to understand the benefits of WLC (Whole Life Costing) in order to make an informed decision when adopting sustainability (Opoku and Ahmed, 2014). The lack of credible research on the benefits of green buildings is also reported as a challenge in the sustainability market (Hwang and Tan, 2012). lack of choices among the "green" products, materials also hinders developments (Potbhare et al.,

2009). Williams and Dair revealed that lack of trained work force and expertise is a challenge in the market (Williams and Dair, 2007), which contradicts with Hwang and Tan's 2012 study, where None of the respondents feel that there is a lack of expertise and knowledge in green building and its principles (Hwang and Tan, 2012).

The financial concern remains the biggest barrier in promoting green strategy in development processes. High green appliance design and energy-saving material costs play a key role as developers assume that developing green real estate would be more expensive (Xiaoling et al., 2011). It is also important to note that sustainability was most successful where it was fully integrated into the delivery process by project directors and managers who provided leadership and where the targets were driven down the supply chain. The supply chain was instrumental in bringing innovation to the project. Engaging with suppliers early in the design process can add real value but is often difficult because strict procurement processes need to be followed (Epstein et al., 2011).

Organization Challenges

Challenges associated with the organisation of development projects has received considerable attention by researchers. A qualitative study through semi-structured interviews with 15 leaders on the challenges facing intra-organizational leaders in contractor and consultant organizations in the UK construction industry revealed lack of knowledge and skills of employees who should be involved in the implementation of sustainability practices. A major challenge to organizational leaders within construction organizations was reported as the real or perceived cost associated with sustainability (Opoku and Ahmed, 2014). Other managerial barriers also include capital budgeting, daily scheduling of routine tasks, conflicting schedules, fear of outrunning schedule and budget, and from the fragmentation and multiplicity in the industry (Abraham and Gundimeda, 2017). It is recommended that the construction and engineering companies take project management in terms of both the process and the practice into consideration when fulfilling requirements of being green. The requirements of an effective project management package to achieve the requirements of green rating systems include project management process in the project life cycle to achieve sustainable construction, feedback and documentation of the project life cycle for continuous enhancement (Wu and Low, 2010).

Project Challenges

Many fundamental challenges in the adoption of building environmental sustainability rating systems are experienced during the project execution. A main challenge is that engineers sometimes join at a later stage and are not part of conceptualization, working on multiple projects at a time, or lacking interaction between different departments. Architects experience challenges such as safety motives, data shortage discouraging optimal sizing, and the changes of design as per convenience (Abraham and Gundimeda, 2017). Moreover, the lack of punctuality from suppliers also causes project-delays and reduces the efficiency of the adoption process. Developers, investors and builders face the barriers of energy costs and the absence of life cycle costing. For the project managers, some of the barriers include time, price and familiarity. Not being responsible for operating budgets, and the more work incurred by the adoption of green measures (Abraham and Gundimeda, 2017). Project challenges repeatedly include the failure to

achieve optimum integration between project stakeholders, the inefficient -or late- inclusion of stakeholders in the development process increases the difficulty of implementing sustainability measures (Williams and Dair, 2007). This aligns with Hwang and Tan's finding that lists: "The lack of communication and interest between project members" as a prominent challenge (Hwang and Tan, 2012). Operational challenges are also a significant part of potential failure after implementing green building rating systems. Building occupants sometimes lack knowledge about new innovations and technology, furthermore, no indicator for high performance or green building can be found in the building and the implemented green features sometimes remain invisible to building occupants (Abraham and Gundimeda, 2017).

Although these studies were conducted in different countries and on a global level, they were widely supported by the perspectives of UAE's project professionals demonstrated below. A resemblance that calls for common corrective measures and offers generalizability potential to the current study.

METHODOLOGY

The research reported in this paper follows a qualitative approach. Five senior project professionals who engaged in development projects that sought certification from different rating systems, underwent semi-structured interviews, where their views and perspectives about the challenges facing the industry were captured. The structure of the interview was kept semi-structured to allow for variation and provide freedom for the participants to lead an open conversation when preferred. Due to the complex nature of design and construction work, the participants needed for data collection were sampled in a "Snowball Sampling" manner. Snowball Sampling is also known as chain referral sampling. In this method, the participants refers the researcher to others who may be able to potentially contribute or participate in the study (Explorable, 2009). This method helped in finding and recruiting participants, for example busy senior project managers who may otherwise be hard to reach. Participants were encouraged to participate by communicating the benefits of research to them, and assuring that the research outcomes can be shared with them.

The overall structure of the interview focused on previously-established domains and subjects identified in the literature, which the participants were encouraged to elaborate on, these include an overview of their knowledge on Estidama's PBRS and Al Sa'fat rating systems, the adoption process, type of adoption (voluntary vs. mandated), stages of implementation, managerial hierarchy, collaboration and communication, and most importantly, the challenges faced with the adoption process. Furthermore, thematic data analysis was performed to capture challenges for the adoption of assessment methods in development projects in the UAE.

RESULTS AND DISCUSSION

The participants of the study included a sustainability team lead, a senior sustainability site manager, senior architect and two sustainability consultants. Their levels of knowledge and experiences with Estidama's PBRS and Al Sa'fat rating systems were uniform to a certain extent, as they were all engaged in senior occupations and in various projects in UAE's construction industry, their experience levels were between 11-20 years. The data showed that both Estidama and Al Sa'fat has received substantial technical and financial support by governmental entities and policy makers, however, numerous challenges were found to be facing professionals when

engaged in the assessment process, which are mainly attributed to the difficulty of adopting new processes and working methods in order to apply the requirements of sustainability assessment methods. The following sections presents two main challenges in terms of integration and client's awareness.

The Integration Challenge

As the built environment development projects involve multiple stakeholders who are spread across a large and widely dispersed supply chain, the main challenge captured by the interviews was the difficulty to engage and integrate the efforts and views of the different organizations and professionals who are involved in the development project. The sustainability team lead who has been working in the UAE for the last 11 years and has witnessed the initial days of Estidama's implementation, expressed that a challenge that continuously faced him as a team lead when adopting the rating system, is the wide number of people involved in projects, demonstrated in the quote below:

"It's not always an easy thing to communicate –as a team lead- the requirements of the rating system to the team members. Because, for large projects you will have the designer, a lot of sub-consultants, a contractor, and sub-contractors. They all have to be involved since day 1"

- Sustainability Team Lead

This poses some challenges in terms of the necessity of informing and educating each stakeholder or team member about his/her role and responsibility in relation to the assessment requirements from the beginning of the project, and following up the assessment requirements through the course of the project. He described the failure to achieve integration as a cause of misery,

"The sustainability team lead has to be there in meetings to raise a red flag and highlight any comments. The process needs a lot of follow up, it's not easy, and that's the whole concept from the integrated design. If you're not doing an integrated design from the beginning, you will not be able to do it, or it will make your life really miserable at the end."

– Sustainability Team Lead

Another interviewee supported these views by assuring a failure at the end of the project in case integration not achieved and any project party walked in isolation.

"Without an integration of work between each single team member, nothing can happen, and when I say team member, I'm not saying the designer, the consultants or the contractor. I mean the developer, the client, the consultant, the contractor, the supplier, the subcontractor, the manufacturer, even the end-user and the facility management. This is not a simple task. Everyone needs to be involved."

-Senior Sustainability Site Manager

"If you go to any project and you find any of these stakeholders or any of these project parties walking in isolation, you will definitely have a failure at the end in various areas of the sustainability target."

-Senior Sustainability Site Manager

Another challenge captured in the data is the non-formal communications adopted by most clients, as a senior architect suggested the use of standard forms of agreement such as the one established by the American Institute of Architects (AIA).

“If we look at the technical issues we face, I’ve been in practice for more than 15 years here in the UAE, in which I did not come across any client who uses a standard form of agreement, such as AIA’s, the non-standard form has no separate form for architect, contractor or even a form for integrated project Delivery”

-Senior Architect

This difficulty of achieving optimum integration in and the significance it has on the process, aligns with the findings of Williams and Dair, 2007; Hwang and Tan, 2012. It is mainly caused by the project-based nature of the construction industry on one hand, and the newness of the assessment method as innovation on the other hand. Integration across development projects requires collaborative efforts from various stakeholders. These findings can potentially provide guidance to UAE’s regulative entities to implement corrective measures in order to address the reported challenges faced by project professionals in achieving optimum integration. Possible solutions include mandating the use of standard forms of agreement among project stakeholders, and using construction project management software.

According to KPMG’s 2016 Global Construction report, only one in five contractors uses a single, fully integrated project management information system (PMIS) across their entire organization. Therefore, construction project management software such as “Aconex” are suggested as a solution for all stakeholders to mitigate most challenges addressed by study participants. Aconex is a cloud platform that gives owners and contractors project-wide visibility and control between the many different organizations collaborating across their projects (Oracle Aconex, 2019).

Clients Lack of Sustainability Awareness

Clients play important role in adopting assessment methods. The data shows that the success of implementing sustainability depends greatly on the client as expressed by a senior architect:

“In sustainability, if you have a good client you will have a good building, if you don’t have a good client you will not have a good building no matter who you hire”

-Senior Architect

While, the adoption of both Estidama and Al Sa’fat is mandatory for smaller projects in general and voluntary for larger developments, cost and value for money are the main concerns for clients when responding to assessment requirements, this is evident in the following two quotes:

“Usually, only about 5% of the clients are taking the environmental sustainability of the project really seriously, clients and contractors mostly care about the costs, some contractors in the market still think that sustainability is a waste of time”

- Sustainability Team Lead

“Now, I may propose a unique design with unique system which I believe, as a knowledgeable and as an expert in the market, engineering-wise, calculation-wise, that this will have 20 or 30% increase compared to the original project. Now, my challenge is to successfully demonstrate to the client that this X million will be returned to you during the operational stage. This is the challenge.”

-Senior Sustainability Site Manager

These perspectives greatly align with Opoku and Ahmed’s study, where they highlighted clients need to understand the benefits of Whole Life Costing (WLC) (Opoku and Ahmed, 2014), which calls for raising awareness through official campaigns by UAE’s governmental entities that include all levels of stakeholders as efforts to enhance the level of knowledge across the industry and clients, eventually easing the process of adoption.

CONCLUSION, LIMITATIONS AND FUTURE RESEARCH

The aim of this study was to explore the challenges of sustainable assessment methods adoption in UAE’s built environment. The aim was founded to directly address and enhance the current processes and adoption mechanisms in the country, to reach optimum adoption. The pilot study focused on the views and perspectives of 5 senior project professionals, which upon implementation, revealed key challenges such as the challenge of achieving optimum integration, and the lack of client’s awareness and knowledge of the importance and the mechanisms of achieving sustainability requirements.

Although the UAE has a certain level of uniqueness due to its climatic, social, cultural, and economic conditions, which poses a limitation on the current findings, this study still contributes to the growing body of literature that examines global barriers and motivations of sustainable construction in general, and with the adoption of building environmental sustainability assessment methods in specific. UAE’s policy makers and experts who develop assessment methods are urged to utilize the findings of this paper to create a discourse for the continuous developments made to the rating systems and the continuous iterations made on the laws guiding the operations of development companies in the country, eventually leading the United Arab Emirates. The main limitation of this study is the potential bias represented in the sampling process, as the participants of this study are limited to “senior” professionals. Future research is encouraged to include different levels of professionals as some challenges could possibly both emerge and fade with differing experience levels.

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