

The Use of Supply Chain Management (SCM) to Reduce Affordable Housing Costs in Iraq's Construction Industry

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Abstract

Affordable housing is a pivotal element in fostering economic development, social stability, and enhancing the quality of life for citizens. As urban population grows and economic disparities widen, challenges of affordable housing become increasingly critical. This problem is predominantly severe in Iraq, where rapid population growth, urbanization, economic instability, prolonged conflicts, and outdated construction practices have worsened the affordable housing crisis leading to massive shortfall of approximately 4 to 5 million units. This paper, which is part of a Ph.D. research, therefore explores the problem and the potential of SCM to transform Iraq's construction sector and improve the affordability of these housings. The challenges of high affordability housing cost in Iraq are explored and the potential of SCM to address the predicament is outlined. Through a mixed-method approach involving Fuzzy Delphi Method (FDM) questionnaires and Focus Group Discussion (FGD) on group of industry experts, this research aims to identify key factors contributing to high affordable housing costs in Iraq and propose an SCM-based framework to overcome the problem. The findings are expected to offer practical insights for policymakers and industry stakeholders, potentially serving as a template for other developing countries to follow in facing similar housing challenges.

Keywords: Affordable Housing, Cost, Iraq, Supply Chain Management, Tools.

Introduction

Affordable housing is a critical issue that has garnered significant attention worldwide, particularly as urban populations continue to grow, and economic inequalities widen. The provision of affordable housing is not only essential for ensuring that low- and middle-income families have access to safe and adequate shelter, but it also plays a vital role in promoting social stability, economic development, and overall well-being. As populations expand and urbanize, the demand for housing increases, often outpacing supply and leading to rising

housing costs. This dynamic has made it increasingly difficult for many individuals and families to secure affordable housing, thereby intensifying the need for innovative solutions to address this challenge (UN-Habitat, 2020). The urgent need for housing in Iraq, particularly for Internally Displaced Persons (IDPs) and refugees, underscores the critical role of the construction industry in rebuilding infrastructure and providing adequate housing solutions (Shadhar, 2017). Estimates suggest a significant shortfall of 4-5 million housing units, further exacerbating social and economic challenges (Al-Metwali, 2019).

Buildings globally consume a substantial portion of energy, with the Iraqi building sector alone accounting for significant energy usage across various sectors such as residential, industrial, commercial, and agricultural (Mohamed et al., 2021). The construction industry, as a key player in the development of housing in Iraq, is central to addressing the affordable housing crisis. However, the industry faces several challenges, including high costs, inefficiencies, and the need for modernization. Iraq currently grapples with severe urban destruction and infrastructure damage, exacerbated by conflicts and wars, leading to widespread displacement and homelessness among its population (Indhu et al., 2021). Outdated construction practices, which are often labor-intensive and reliant on outdated technologies, further contribute to these inefficiencies, leading to increased costs and extended project timelines. Traditionally, Iraqi construction practices have relied on conventional techniques involving thick brick walls and concrete roofing slabs, which are increasingly unsustainable in the face of global warming and technological advancements (Al-Obaidi et al., 2014). The construction sector has been slower to innovate compared to other industries, which has hindered its ability to respond effectively to the growing demand for affordable housing.

The severe shortage of affordable housing has pushed many IDPs and refugees into substandard living conditions such as communal centers, tents, and informal settlements lacking basic services (Ahmad, 2022). This situation not only compromises living standards but also poses safety risks due to overcrowding and inadequate infrastructure (Irene Jahn et al., 2015). Approximately 3.1 million people in Iraq are homeless or live in inadequate shelters, highlighting the pressing need for comprehensive housing solutions (Alfahad et al., 2022).

Iraq's construction market, valued at \$11.4 billion in 2022, is poised for growth driven by infrastructure projects and initiatives in energy, oil, and gas sectors (Eidan, 2022). Despite these opportunities, Iraq lacks a coherent National Housing Policy, leading to inconsistent housing programs and exacerbating the housing shortage (Popkova et al., 2017). There is a pressing need to explore new methodologies and strategies that can enhance the efficiency and cost-effectiveness of housing construction (Azhar, 2011; McKinsey Global Institute, 2017). Strategic investments and reforms are crucial to addressing these challenges and achieving sustainable development in the housing sector (Pillar, 2018).

Supply Chain Management (SCM) has emerged as a potential solution for many of the challenges facing the construction industry. Supply Chain Management (SCM) is an innovative management philosophy that first emerged in the manufacturing industry and was brought into the construction industry during the 1990s. Its introduction was primarily driven by two influential UK Government reports: the Latham Report (1994) and the Egan Report (1998). This led to SCM being mooted as the way forward for the construction industry worldwide

(e.g., Egan Report, 1998; Love et al., 2004; Riazi et al., 2019; Riazi et al., 2020) due to its wide-range benefits on project performances (e.g., Love et al., 2004; Cheng et al., 2010; Riazi et al., 2019; Riazi et al., 2020) as well as its successful applications on real projects (e.g., Brady et al., 2006; Potts, 2009). One of the key benefits of applying SCM to the construction industry is the potential for cost reduction. In many cases, a significant portion of construction costs are tied up in inefficient supply chains, where delays, material shortages, and poor coordination can lead to increased expenses. SCM entails restructuring of entire production and delivery processes up to the delivery of final products. In the construction industry, SCM enables enhanced efficiency, minimization of wastes, as well as maximizing resource utilization, thereby lowering costs and improving efficiency (Christopher, 2016). By adopting SCM principles, the construction industry can better manage the complexities associated with housing development, such as the sourcing of materials, logistics, and project management. This, in turn, can contribute to more sustainable and affordable housing solutions (Vrijhoef & Koskela, 2000).

The adoption of SCM can also facilitate the use of advanced construction technologies, such as prefabrication and modular construction, which have been shown to reduce costs and construction times while maintaining or even improving quality (Lennerts et al., 2003; Tam, 2012). Off-Site Construction (OSC) holds promise in meeting the growing demand for housing efficiently and cost-effectively (Damoah et al., 2018) via accelerating construction timelines, reducing costs, and improving quality control, which are particularly advantageous in addressing Iraq's housing crisis (Ansari & Taylor, 2016). Beyond that, other SCM tools such as champion/driving personalities, Building Information Modelling (BIM), pre-qualification using "team criteria" scores, joint risk management, and regular joint reviews are also beneficial in improving collaboration and teamwork within the construction project setting, which are essential elements for successful project undertakings (Riazi et al., 2019). These modern approaches align with efforts to enhance construction efficiency and effectiveness, contributing to broader economic stability and social welfare improvements.

This paper, which forms part on an ongoing Ph.D. research focuses on the housing sector dilemma faced by Iraq's construction industry, particularly the challenges in providing affordable housing solutions by proposing SCM as the way going forward to improve the situation. The importance of this study lies in the critical role of addressing severe affordable housing shortages in Iraq that are in the millions which has caused more challenges to the economy and social especially on the Internally Displaced Persons (IDPs) as well as the refugees that live in inferior conditions. and hence, worsens the economic and social challenges. The domination of outdated, conventional practices in Iraq has made the need to transform very urgent as inefficiencies and unsustainability of those methods has led to recurrent suffering of its citizens. Hence, the need to move towards SCM is more imminent than ever. The philosophy behind SCM is transformative, shifting from outdated, inefficient practices toward a more team-oriented, collaborative, integrative approach that prioritizes relationships and value creation. SCM, which adopts a "systemic view" in its implementation, has been employed with great success in several developing nations. The advantages of SCM in boosting construction performance have been well proven time and time again (e.g., Turner, 1993; Stanford et al., 1999; Dubois & Gadde, 2000; Horvath, 2001; Cheng et al., 2010; Mehdi Riazi, 2014; Riazi et al., 2019; Riazi et al., 2020). SCM's working philosophy and tools

have been proven potential to overcome industry's problems from many perspectives (Riazi et al., 2019) including in real-life applications (e.g., Brady et al., 2006; Potts, 2009), which therefore, creates a cautious optimism on the potential of SCM to be the savior of the current predicament facing the Iraq affordable housing sector. This research is crucial not only to meet Iraq's urgent affordable housing demand but also contributes to a more sustainable construction industry in the country by introducing wide-range of good practices within SCM to revolutionize practices to be in line with practices of the modern world. This paper will delve into this matter by exploring the Iraq's housing sector, the problems faced as well as SCM's transformative potential to help the country get out of their housing crisis hence, laying path for future social, economic and infrastructure stability.

Literature Reviews

Iraq Housing Sector

Iraq's housing sector has gone through turbulent path over the last decades which has led to numerous initiatives and research to resolve the predicament. Early initiatives were via the Doxiadis Plan during the 1950s which aimed at urban management and abolishing slums in Iraq's capital of Baghdad and also Polservice Study in 1970s which comprehensively assessed the country's housing needs up to year 2000, thereby contributing policies on organizing and administering the sector (Al-Adhami, 1975; Shaikley, 2007; Al-Hamawandi & Al-Qaisi, 2010). These periods led to noteworthy pace in the country's sector, particularly in Baghdad, where yearly housing production achieved 50,000 residences within the 1980s hence, number of slums were reduced by 69.4% from where they were in 1956 (Yousif, 2012; Iraqi Ministry of Planning, 2010).

However, this progress did not remain for long as the Iran-Iraq war from 1981 to 1989, the Gulf-War in 1991 as well as the subsequent UN sanctions created a setback for the housing sector (Al-Shock, 2008; Nashoor, 2012) leading to a major decline in number of dwellings produced, which was roughly at only 24,000 units by 2002 (PADCO, 2006; Shaikley, 2007). The declining trend further continued due to the US-led coalition in the following year causing disruption in housing production causing numbers to go down to as low as approximately 8,000 dwellings in 2003 and slowing picking up pace to roughly 32,000 yearly by 2012 although with substantial regional inequalities (Shaikley, 2007; Central Statistical Organization, 2014).

The housing sector is a critical component of economic development, playing a central role in social stability and the well-being of citizens (Llena-Nozal et al., 2019). In Iraq, the need for affordable housing has reached a critical point due to a combination of rapid population growth, urbanization, and the aftermath of years of conflict and economic instability. The World Bank (2019) highlights that Iraq's population has been increasing at an annual rate of 2.5%, and it is projected that by 2030, the population will exceed 50 million, with a significant proportion residing in urban areas. This urban shift will exacerbate the existing housing deficit, particularly in the affordable housing sector, where supply has consistently lagged demand. Iraq's housing crisis is not just a matter of quantity; it also pertains to the affordability and quality of the housing stock. According to the United Nations Human Settlements Programme (UN-Habitat, 2021), approximately 3 million housing units are required to meet the current demand, a figure that is expected to rise as urbanization

continues (González-Díaz, et al., 2021). However, the provision of affordable housing is hampered by several factors, including high construction costs, bureaucratic inefficiencies, and a lack of access to affordable financing.

High construction costs are a significant barrier to the development of affordable housing in Iraq. These costs are driven by several factors, including the high price of construction materials, inefficient construction practices, and a lack of modern construction technologies (Alfahad, et al., 2022). The Iraqi construction industry remains largely traditional, with limited adoption of cost-saving technologies such as Building Information Modeling (BIM), which has been shown to reduce costs and improve efficiency in other contexts (Azhar, 2011; Zaia et al., 2023; Hatem et al., 2021). The reliance on outdated construction methods not only increases costs but also results in lower-quality housing that does not meet modern standards.

Furthermore, government policies and regulatory frameworks play a crucial role in the housing sector, yet in Iraq, these have often been inadequate or poorly implemented (Al-ossmi et al., 2024). The Ministry of Construction, Housing, Municipalities and Public Works has struggled to develop and enforce policies that encourage the development of affordable housing. Issues such as corruption, lengthy approval processes, and unclear land ownership laws have further complicated the situation (World Bank, 2018). Additionally, the lack of incentives for private sector investment in affordable housing has led to a focus on higher-end developments, leaving low-income families with limited options (Butcher et al., 2020).

Moreover, the public sector's inability to effectively coordinate with private developers has hindered the potential for public-private partnerships (PPPs) in housing development (Damoah et al., 2020). PPPs have been successful in other countries in bridging the gap between government objectives and private sector capabilities, but in Iraq, such partnerships are rare due to the fragmented nature of the construction industry and the lack of a clear regulatory framework (UN-Habitat, 2021).

The lack of affordable housing has far-reaching economic and social implications. Economically, the housing deficit contributes to increased living costs, which in turn affects the overall cost of living and exacerbates poverty levels (Araji & Shahin, 2021; Lee et al., 2022). Socially, inadequate housing conditions lead to overcrowding, which can cause a range of health issues, including the spread of infectious diseases. Furthermore, the absence of affordable housing can lead to social unrest, as marginalized communities feel increasingly disenfranchised (World Bank, 2019). The housing crisis also has implications for Iraq's broader economic development (Hussein, 2022). The construction sector is a significant contributor to GDP, and inefficiencies in this sector can have ripple effects across the economy. Lowering the cost of affordable housing in Iraq could augment economic growth, stimulate employment opportunities, and enhance living standards for its citizens.

SCM as the Way Forward

Transforming construction practices would offer a clear advantage over conventional approaches (Ibrahim et al., 2010). A famous UK Government Funded Report by Sir John Egan in the year 1998 stressed on the need for construction industry to modernize itself to become more competitive and efficient. Conventional practices have long been discouraged (e.g.,

Naoum, 2003) hence, calls for change have been made worldwide (e.g., Love et al., 2004; Riazi et al., 2020). SCM has been mooted as the way forward for the industry by many researchers (e.g., Egan Report, 1998; Barker et al., 2000; Strategic Forum, 2002; Love et al., 2004; Abd Shukor, 2011; Riazi et al., 2019; Riazi et al., 2020) since the intricate nature of today's industry calls for increased collaboration, as self-sufficiency is no longer feasible (Strategic Forum, 2002; Love et al., 2004).

SCM, initiated and introduced by the manufacturing industry (Toyota), was brought to the attention of the construction industry via two (2) famous UK Government Reports - Latham Report (1994) and Egan Report (1998). SCM was advocated as means of revolutionizing the construction industry to foster higher level of success and addressing fragmentation by inspiring all supply chains to work together as a "real team", as well as making sure that everyone consistently practices effective communication, coordination, collaboration, and integration (Riazi et al., 2020). Riazi & Nawi (2018) defined SCM as *"a modern managerial philosophy which stands firmly on the need for continuous integration of two or more project parties from initiation to handover and throughout those phases, value shall be achieved via joint initiatives, pooled resources, pain/gain sharing, mutual trust and a long-term perspective on relationship towards the accomplishment of a fixed set of mutual objectives"*. SCM focuses on "joint effort", which is *"a collaborative endeavour that aims to create an integrated project delivery by including elements of effective teamwork towards achieving both short-term and long-term outcome that benefits all parties"* as among its fundamental elements (Riazi et al., 2019)

SCM has been advocated to enhance the performance of the construction industry and improve its adaptability to unexpected events (Mehdi Riazi, 2014). It has constantly proven its capacity to improve and refine the industry's inefficient practices. Benefits of SCM on construction industry include better transparency (Ali et al., 1997), reduces paperwork (Turner, 1993), improves coordination (Ahmed et al., 2002), promotes pleasant behaviors (Briscoe et al., 2004), improve trust and commitment (Ali et al., 1997), improve information flow (Ahmed et al., 2002), better responsiveness (Horvath, 2001; Cheng et al., 2010), better decision-making (Cheng et al., 2010), reduce disputes and conflicts (Briscoe et al., 2004), and consequently enhance performance, competitiveness (Burgess, 1998) and customer satisfaction (Horvath, 2001).

Beyond that, there have been numerous instances where SCM was used on real projects, and it led to significant success in boosting time performance (e.g., Brady et al., 2006; Potts, 2009) while it has proven effective at assisting better collaboration in construction project settings (Riazi et al., 2019) all of which are vital ingredients of a successful project. To sustain a competitive edge, leveraging both current and emerging technologies is vital; therefore, "process improvement tools" are crucial for achieving success across the supply chain (Cheng et al., 2001). Many SCM tools has also been proposed or used in the past – Champion/Driving Personalities (Kumarsawamy et al., 2007); Joint Agreed Goals (Maqsood et al., 2003); Building Information Modelling (Holness, 2008); Early Involvement of Supply Chain (Kumaraswamy et al., 2004); Joint Risk Management (Potts, 2009); Regular Joint Review (Ritchie & Brindley, 2007); Profit Sharing arrangements (Eriksson & Pesa`maa, 2007); Risk Sharing Arrangements (Eriksson & Pesa`maa, 2007); Total Quality Management (Pheng & Teo, 2004); Value

Management (Cheng et al., 2001); Continuous Training (Clark & Wall, 1998); and Training and Development policies (Cheng et al., 2001) hence, creating an optimism on its potential of being the savior of Iraq housing sector.

Benefit of SCM on Affordable Housing Crisis in Iraq

Given the complexity of the challenges facing Iraq's housing sector, there is a clear need for a comprehensive approach to address the issue. Going forward, it is detrimental for the industry to incorporate modern construction technologies, streamline regulatory processes, and encourage private sector participation through incentives and public-private partnerships. With proven benefits as well as success applications, adopting SCM in Iraq's affordable housing sector could significantly alleviate the challenges and housing crisis faced.

SCM principles focus on optimizing the flow of materials, information, and finances across the supply chain, ensuring that resources are used efficiently and cost-effectively. By applying SCM to the construction industry, Iraq can reduce the high construction costs that have been a significant barrier to affordable housing. For instance, effective SCM practices, such as strategic sourcing and procurement, can help lower the cost of construction materials by enabling bulk purchasing and fostering long-term partnerships with suppliers (Mentzer et al., 2001). Additionally, SCM can streamline logistics and inventory management, reducing waste and ensuring that materials are available when needed, which minimizes delays and associated costs (Christopher, 2016). These efficiencies can make it possible to construct housing at a lower cost, thereby increasing the availability of affordable housing units.

Another key benefit of SCM in the housing sector is the potential to improve the quality and efficiency of construction through the adoption of modern technologies and practices. SCM facilitates better coordination among various stakeholders, including suppliers, contractors, and government agencies, which is crucial for integrating innovations such as Building Information Modeling (BIM) and lean construction techniques. These technologies can enhance project planning, reduce errors, and optimize resource use, ultimately leading to higher-quality housing at a lower cost (Azhar, 2011; Hatem et al., 2021). Moreover, SCM can support the adoption of modular construction methods, where housing components are pre-fabricated and assembled on-site, significantly reducing construction time and costs while improving consistency and quality. Prefabrication allows for improved productivity in construction; evident from experience in Heathrow Terminal 5 project that led to 15% productivity surge using the method (see Building Magazine, 2004). It also reduces waste production in projects (Potts, 2009). By fostering collaboration and communication across the supply chain, SCM can drive the modernization of Iraq's construction industry, ensuring that affordable housing projects meet both cost and quality standards.

Furthermore, SCM can address the regulatory and bureaucratic inefficiencies that have hampered affordable housing development in Iraq. Effective SCM involves the integration of supply chain activities with broader business processes, including compliance with regulations and coordination with government policies (Lambert & Cooper, 2000). By implementing SCM, the housing sector can streamline approval processes, improve transparency, and reduce corruption, which are critical for attracting private sector investment and enabling successful public-private partnerships (PPPs). SCM can also facilitate

better land management by ensuring clear communication and documentation across the supply chain, which can help resolve issues related to unclear land ownership laws (UN-Habitat, 2021). By improving regulatory compliance and reducing bureaucratic delays, SCM can foster a more conducive atmosphere for the development of affordable housing, ultimately helping to bridge the gap between supply and demand in Iraq's housing market. To address the present situation and recover from crisis, companies must recognize the suitable approaches to address emerging trends to allow for enhancement of construction activities at the strategic, tactical, and operational levels (Le & Nguyen, 2022). This therefore calls for a more thorough approach on the Iraq affordable housing crisis and to look at the challenges as well as solutions from a systemic perspective. Besides, problems in construction projects usually surface because of numerous inter-connected deficiencies, thus all issues need to be addressed if improvements were to be expected (Riazi et al., 2020) which in this case, the extensive selection of available SCM tools can be recommended to provide clearer guidance on their application; hence allowing for more effective implementation towards overcoming the country's affordable housing crisis.

The Route of this Research

Towards achieving all its objectives, this research needs to explore and investigate the causes of high affordability housing cost in Iraq to consequently establish the main contributors and thereby allow for solutions to be proposed based upon the wide-range available SCM tools. Towards achieving the outcomes, the research route would involve several steps in gaining and analyzing data. Research design involves linking research questions with data by using appropriate tools and processes (Keith, 2016) which will then allow for appropriate methodologies to be implemented for solving each research questions and addressing the problems (Fellows & Liu, 2015). Instead of relying on single method, which has been linked to unreliable outcomes (Patton, 2014), this research will follow recommendations by Creswell & Clark (2007) who promotes the use of mixed-method by combining both quantitative and qualitative approaches to attain greater overall robustness of the findings.

This research will adopt a similar approach used by Ahmad et al (2023), in their research whereby it involves two (2) phases – needs analysis phase and the actual data collection. In the needs analysis, it is crucial to establish that this research is necessary (Ahmad et al., 2023) which in the case of this research is to demonstrate the need to reduce affordable housing costs in Iraq. To achieve this, expert interview is beneficial to scrutinize as well as to explore further factors causing high affordable housing cost in Iraq which could then be used to supplement information obtained from literature reviews for use during data collection using Fuzzy Delphi Method (FDM). The criteria of experts for this purpose will adopt parameters set by Berliner (2004) and Cha and Lee (2018), which necessitates that they have continuous field experience of over five (5) years as well as the standard set by Pill (1971), that they must have experience in the relevant field (i.e., Iraq affordable housing sector). The interview will aim for six (6) experts following similar response numbers used by Mehdi Riazi (2014), and Ahmad et al. (2023) in their research which also used similar method.

Consequently, in the actual data collection phase, a combination of quantitative and qualitative methods will be used to achieve the final research outcome. First, quantitative method in form of FDM questionnaire will be used to establish the causes of high affordable

housing cost in Iraq then, qualitative method in form of Focus Group Discussion (FGD) will lead to the development and validation of the final research framework. Sampling for both will follow proposition by Honigmann (1982), to use nonprobability sampling; and in form of purposive sampling as regarded suitable by Patton (2014), for research aiming to identify a specific group of individuals based on certain criteria—in this case, experts in Iraq affordable housing sector with over five (5) years of continuous experience.

In establishing the main causes of high affordable housing costs in Iraq, FDM facilitates decision-making using experts' opinions and consensus via a quantitative approach (Manakandan et al., 2017). It involves collecting and categorizing expert knowledge in natural language through surveys and reviews (Tarmudi et al., 2016). Due to the nature of FDM that targets existing industry experts, the chances of misinterpretation can be reduced hence increasing validity on findings (Ahmad et al., 2023). In the second phase, FGD enables the acquisition of expert consensus for developing a valid final framework. FGD is a well-established and detailed group interview method (see Fellows & Liu, 2015) that involves a discussion among a small group of participants, guided by a facilitator, to assess the strength of their opinions (Ahmad et al., 2023). During the FGD session, participants will involve in matching suitable SCM tools to overcome each main cause of high affordable housing cost in Iraq hence leading to development of this research final framework. A minimum of two (2) FGD sessions will be conducted – first to develop the framework and second one to validate them. Further sessions will be conducted should two (2) sessions were not enough to validate the final framework.

Significance of Research

The significance of this research lies in its potential to provide a sustainable solution to Iraq's severe affordable housing crisis, which has far-reaching social, economic, and political implications. The research addresses a critical gap in the literature by investigating the potentials of SCM integration into Iraq's construction industry as well as presents a practical approach on how it can be utilized to influence housing cost reduction, improve efficiency, and tackling universal issues within the industry itself. Given that Iraq's housing deficit is exacerbated by high construction costs, inefficient practices, and regulatory challenges, this study's findings could have a transformative impact on the housing sector (Alfahad et al., 2022) especially for the housing developers, industry stakeholders, construction industry professionals as well as the millions of Iraqis that are struggling to access affordable housing. Beyond the economic benefits, this study is important for its exploration of the broader social and regulatory factors contributing to Iraq's housing deficit. The housing crisis in Iraq is not merely a matter of supply and demand; it is deeply intertwined with issues of urbanization, population growth, and government policy (World Bank, 2019; UN-Habitat, 2021) hence, by highlighting the role of SCM in addressing these matters via streamlining of processes, optimization of resources, and fostering innovation, it can provide policymakers with actionable insights into how to reform existing regulations and create an environment conducive to affordable housing development. SCM could also benefit effective public-private partnerships, a critical yet underutilized tool in Iraq's housing sector, thereby enabling more effective collaboration between stakeholders (Damoah et al., 2020) to better meet Iraq's housing needs.

Moreover, the significance of this study extends to its potential to stimulate broader economic development in Iraq. The construction sector is a major driver of the country's economic activity as it has a multiplier effect on a vast number of other industries that depend on the construction industry to thrive. Therefore, a surge in efficiency and performance of the construction industry would certainly stimulate job creations, attract investments, and raise living standards for millions of Iraqis. By developing a tailored SCM framework for the affordable housing sector in Iraq, this study would not only address Iraq's affordable housing dilemmas, but it could also contribute to the global efforts in affordable housing as the framework could serve as a prototype for implementation of similar initiatives in other developing countries facing similar challenges.

Conclusion

In conclusion, the persistent affordable housing crisis in Iraq is deeply rooted to various inefficiencies within the nation industry practices. The severe deficit in housing, exacerbated by ongoing conflict and rapid urbanization, underscores the need for innovative solutions to provide adequate and affordable shelter for the growing population. Conventional practices, which pretty much dominates the Iraq housing sector exacerbates the situation since this routine have proven ineffective in addressing the challenges faced hence, necessitating a shift towards modernized approaches that can enhance efficiency and reduce costs. This research highlights the potential of SCM as the way forward for the Iraq affordable housing crisis due the vast proven benefits of SCM evident from past research and industry applications such as optimizing resource use, improving coordination, encouraging innovative solutions, etc. SCM therefore offers a pathway to more cost-effective and sustainable housing solutions.

SCM adoption could provide a significant impact on Iraq's housing sector via procedural reforms, melding in contemporary and modern construction technologies as well as lowering costs of material, all of which are critical for enhancing overall project efficiency and quality, hence reducing affordable housing costs, and thereby enabling the nation to better meet demands for affordable housing among its citizens. Additionally, SCM can address regulatory and bureaucratic barriers, creating a more conducive environment for public-private partnerships and investment. As Iraq continues to face challenges in meeting its affordable housing needs, proven benefits and success stories from SCM implementation could perhaps provide a light at the end of the tunnel. The wide-range beneficial tools within SCM could provide a practical and impactful solution. The final framework could also offer a template that other developing nations with similar issues could adopt ultimately, contributing to both national and global efforts of enhancing affordability of housing for their population.

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