

Success Factors (SFs) for Sustainable Affordable Housing: A Review Study

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Abstract

The world is grappling with insufficient affordable housing to meet the mounting shelter needs of low-income earners. In response, country-specific success factors (SFs) for sustainable affordable housing have been reported. However, there is inadequate review study to identify global SFs and to develop a comprehensive framework for sustainable affordable housing. Accordingly, a three-stage methodology was adopted for the identification of research articles on SFs for sustainable affordable housing. Through manual examination of the content of the articles, SFs for sustainable affordable housing were identified. Then, a comprehensive framework was developed from the identified SFs. The study findings could aid policy development for the attainment of a sustainable affordable housing market. Besides, the findings provide relevant policy options for international organizations that seek to employ various policies to globally ameliorate housing needs of low-income earners. Moreover, the criticality as well as the interrelationship among the SFs towards identifying critical success factors (CSFs) for sustainable affordable housing is a knowledge gap whose underlying factors are the checklist of the SFs provided in this study.

Keywords: Affordable housing, Housing supply, Success factors, sustainable housing, Success strategies

1. Introduction

Various definitions exist with regard to the criteria for housing affordability. Some of these include affordability index, percentage-income ratio, residual income approach and quality based measure (Abelson, 2009; Bogdon et al., 1993; Stone, 2006). Among them, the simplest definition for housing affordability is the ratio of the price of housing to income of the targeted household (Abelson, 2009). Affordable housing is defined as housing that can be purchased or rented by household in the bottom 40% income bracket within 30% of the income of households. Housing is affordable if the income of household covers the cost of housing and other non-housing cost such as food, clothes and education without compromising on decent living of the household (Stone, 2006). Aside being affordable, housing must be sustainable (Chan and Adabre, 2013). Sustainable affordable housing is “housing that meets the needs and demands of the present generation without compromising the ability of future generations to meet their housing needs and demands (Pullen et al., 2010 p. 13).”

Access to sustainable affordable housing for all citizenry provides an indispensable need for safe, secure and comfortable accommodation. It guarantees social and economic growth. Despite the widespread recognition of the importance of sustainable affordable housing, efforts to develop and implement strategies for sustainable affordable housing have not been successful (Tighe, 2010). Housing affordability crisis has been a mounting problem which is partly caused by plummeting housing supply and inadequate finance (Ball, 2016). Formidable challenges such as colossal price of housing, undeveloped mortgage institutions, stringent mortgage system, high cost of land, supply lags behind demands of housing, high cost of skilled labour and community preferences have thwarted the attempts of policy makers (Sharam et al., 2015). Besides, inadequate government support and unstable macroeconomic environment such as high interest rates and high inflation rates, which are very common among developing countries, have a detrimental effect on the effectiveness and efficiency of housing policies (UN-Habitat, 2009). The net outcome of these barriers is a vicious cycle of poor-quality neighbourhood, overcrowded rooms, illegal building appendages and increase number of slum dwellers (Adinyira and Anokye, 2013; Adjei and Kyei, 2012; Nicholas, 2012). For instance, it has been stated that approximately 32% of the world’s population dwell in slum housing (Golubchikov and Badyina, 2012). Residents of slums mostly live in substandard housing units that offer inadequate shelter from elements of the weather while exposing the residents to pollution and infective agents which lead to poor health (Brueckner, 2013). Evidently, the challenge of the global affordability crisis is clear in the increasing number of slum dwellers and homeless population in both developing and developed countries (Golubchikov and Badyina, 2012).

Globally, policy makers are in a quandary with regard to strategies to enhance sustainable affordable housing; some are in a predicament whether more or less policy intervention would be a step in the right direction (Ball, 2016) or if easing supply and/or demand constraints would improve affordability (Sharam et al., 2015). To enhance sustainable affordable housing development, researches on various strategies have been conducted (Gan et al., 2017; Chiu, 2007; Turcotte and Geiser, 2010). Typical among them are studies on success factors (SFs). With the increasing studies on successful strategies or factors for sustainable affordable housing, other researchers have solely considered sustainable housing as housing that is “greenly” designed and constructed (green buildings) (Darko et al., 2018; Chan et al., 2018). However, while green design and construction is a vital element of sustainable affordable housing, it is not an exhaustive factor (Turcotte and Geiser, 2010). Consequently, based on the often interchangeably use of the term “green” with “sustainable” in reference to housing or building, Turcotte and Geiser (2010) stated that there is still a need for a sufficient definition of sustainable affordable housing development. Yet, studies have shown that a framework is more relevant and useful than a precise definition when relating the constructs for sustainable affordable housing development (Bhatti, 2001; Pullen et al., 2010; Ibem and Azuh, 2011). According to Gan et al. (2017 p. 427), “one of the critical issues is the lack of sustainability framework to integrate sustainability in affordable housing.” In the light of the numerous studies on success factors (SFs) for

sustainable affordable housing, it is worth noting that few review studies exist on summarizing previous studies and possibly developing a comprehensive framework for sustainable affordable housing development. Therefore, the overarching aim of this study is to systematically review the literature on SFs towards identifying and developing a conceptual framework of SFs for sustainable affordable housing projects. This review study would identify SFs that serve as ubiquitous policy options for policy makers – both national and international – to select from the identified SFs those that are contextually appropriate for mitigating the worldwide sustainable affordable housing challenges. Furthermore, the conceptual framework will serve as a guide to policy makers in ensuring sustainable affordable housing in all aspects of sustainable development. Finally, the study provides a checklist of SFs for future empirical research towards identifying critical success factors (CSFs) for sustainable affordable housing.

The remainder of this paper commences with a research methodology adopted to achieve the aim of the study. The research methodology is presented in Section Two of the study. Then, the findings of the study are analysed and presented in Section Three of the paper. Finally, the conclusions and proposed future research study are stated in Section Four.

2. Research Methodology

This study adopts a systematic review of the literature to identify SFs for sustainable affordable housing. Similar methodology has been adopted by [Adabre and Chan \(2018\)](#) to identify the critical success criteria for sustainable affordable housing. Comprehensive search engines consisting of Web of Science, Google Scholar and Scopus were employed for retrieval of papers. A three-stage approach was adopted for the literature review of previous papers published in the past two decades (1999 – 2018, inclusive). The various stages are presented in Fig 1.

2.1. Stage 1: Identification of Academic Articles

At stage one, academic articles on SFs for sustainable affordable housing were identified using the search engines. This was achieved through a comprehensive search conducted in the title / abstract / keyword field of the search engines. Search keywords included: affordable housing, low-cost housing, public housing, critical success factors, sustainable housing and success factors. Papers that contained any of these terms in the title, abstract or keywords were considered to have met the requirement of stage one of this study. The search was further constrained to the subject area of “social science”, “engineering”, “economics, econometrics and finance” and “environmental science” with article or review selected as the document type. Articles published under general categories of discussions / closures, article in press, letters to editors, conference proceedings, editorial book reviews forums, seminar report briefing were excluded. Only peer review articles were considered for the following reason: peer review articles are the most relevant sources of information because peer review leads to the selection for publication and rejection of those with fallacious or harmful content ([Jefferson et al., 2002](#)). The search code for the retrieval of papers is as follows:

TITLE-ABS-KEY (“affordable housing” OR “public housing” OR “low-cost housing” OR “sustainable housing”) AND TITLE-ABS-KEY (“success factors” OR “critical success factors” OR “supply”) AND (LIMIT-TO (DOCTYPE , “ar”) OR LIMIT-TO (DOCTYPE , “re”)) AND (LIMIT-TO (SUBJAREA , “SOCI”) OR LIMIT-TO (SUBJAREA , “ENVI”) OR LIMIT-TO (SUBJAREA , “ENGI”) OR LIMIT-TO (SUBJAREA , “ECON”)) AND (LIMIT-TO (LANGUAGE , “English”)).

2.2. Stage 2: Selection of Target Articles

The second stage involved the selection of final papers from the target papers identified in stage one. In stage two, the target papers are scrutinized for identification of the search keywords in the title, abstract and keywords of the documents. Then, manual content analysis of the introduction and conclusion is carried out for the selection of papers as final papers. Upon identifying the final papers, manual content analysis of the entire document was conducted. The search resulted in a total of 26 papers on SFs for sustainable affordable housing. The 26 papers for this study are deemed adequate since the research objectives could be achieved. Besides, [Nguyen \(2005\)](#) conducted manual review study using a total of 17 studies while [Anderson et al. \(2003\)](#) reported their review findings based on 23 articles and reports.

2.3 Stage 3: Analysis of Final Papers

Through manual content and thematic analysis, the papers retrieved were examined to determine the SFs for sustainable affordable housing. Thirty-two success factors (as shown in Table 1) were identified from the literature review. Based on the identified 32 SFs, a comprehensive framework was developed.

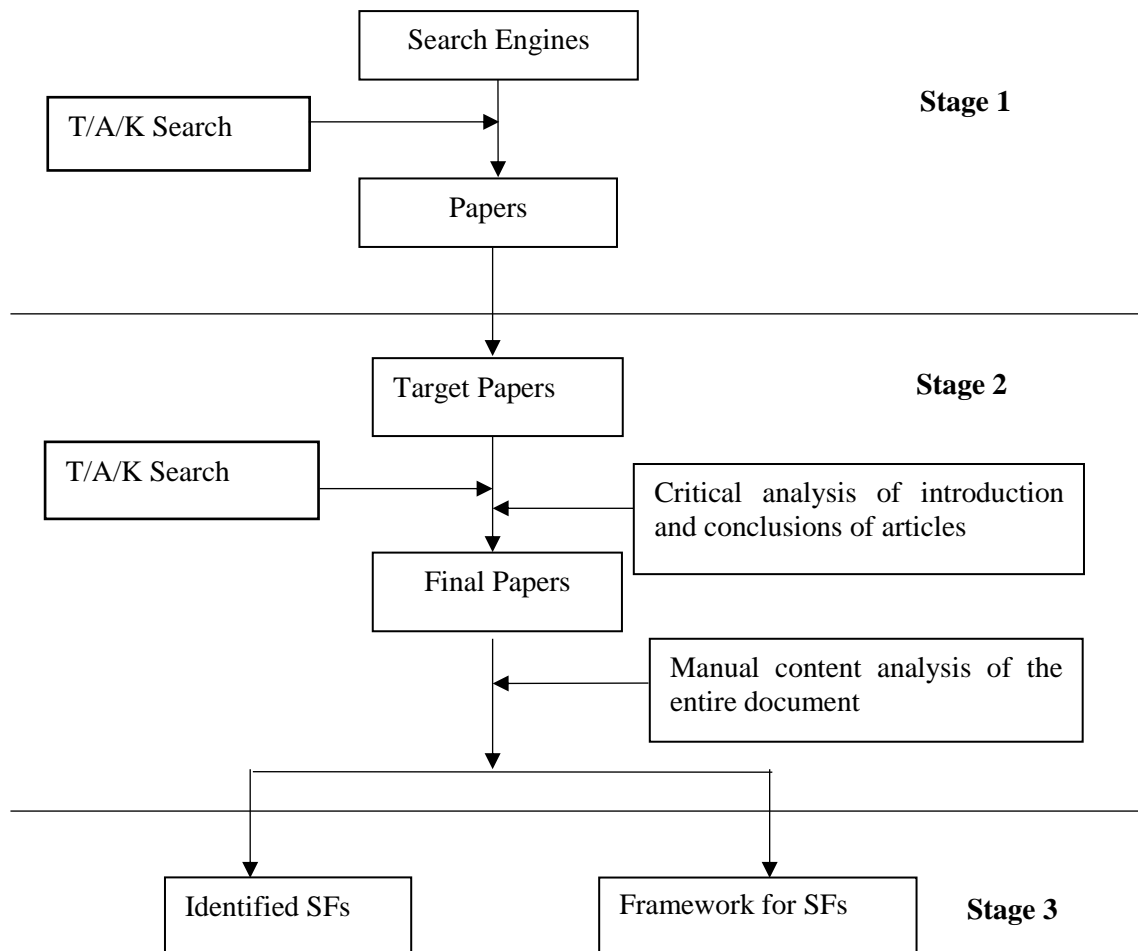


Fig. 1: Research Framework Source [Osei-Kyei and Chan \(2015\)](#)

Note: T/A/K – title / abstract / keywords

3.1 Analysis of Findings from Review on SFs for Sustainable Affordable Housing

Findings on the SFs for sustainable affordable housing from the review study of 26 papers are shown in Table 1, with a total of 32 SFs identified. Some of the SFs include but not limited to access to low interest housing loans; mixed land development; linking commercial development approval to funding for affordable housing; stable macro-economic system; effective private sector participation; incentives for developers to include affordable housing in their projects; governments providing guarantees to developers and improved supply of low cost developed land by governments. What now ensue are classification and discussion on the various groups of the identified SFs.

Table 1: Success Factors for Sustainable Affordable Housing

Authors	Success Factors (SFs)																																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
Gan et al. (2017)		√												√				√		√											√	√	
Alawadi et al. (2018); Agyemang and Morrison (2017); Kwofie et al. (2016)			√																									√		√			
Ponce (2010)	√			√	√		√			√																							
Klug et al. (2013)					√										√																		
Huang et al. (2015)							√																										
Whitehead (2007)					√						√	√																					
Obeng-Odoom (2010)																					√												
Mukhtar et al. (2017)									√				√				√				√			√	√		√						
Jha and Iyer (2007)																											√						
Gurran et al. (2015)					√																												√
Pullen et al. (2010)					√																												
Oyebanji et al. (2017)									√					√									√	√									
Winston (2010)																				√													
Adinyira and Anokye (2013)															√																		
Morrison and Burgess (2003)						√																											
Lizaralde and Root (2008)												√																					
Mohd Thas Thaker and Chandra Sakaran (2016)																													√				
Massyn et al. (2015)																						√											
Nelson et al. (2004)																						√											
Cao and Keivani (2013)											√																						
Chiu (2007)								√																									
Ibem (2010)																																	
Boamah (2010); Dempsey et al. (2012)	√																																
		√																															

1= Access to low interest housing loan; 2= Mixed land development; 3= Linking commercial development approval to funding for affordable housing; 4= Stable macro-economic system; 5= Effective private sector participation; 6= Incentives for developers to include affordable housing in their projects; 7= Governments providing guarantees to developers; 8= Improved supply of low cost developed land by government; 9= Political will and commitment to affordable housing; 10= Stable political system; 11= Formulation of sound housing policies; 12= Governments' provision of housing subsidies to households; 13= Good location for housing projects; 14= Adequate accessibility to social amenities; 15= Mandatory inclusion of affordable unit policy in developer's projects; 16= Adaptable housing design and construction; 17= Transparency in allocation of houses; 18= Adequate maintenance of existing houses; 19= Monitoring conditions / defects of completed houses; 20= High density affordable housing development; 21= Increase tax rate to discourage long holding period of vacant land; 22= Adequate infrastructure supply by government; 23= Compliance with quality targets; 24= Adherence to project schedule; 25= Compliance with project budget; 26= Good coordination among project participants; 27= Sufficient staffing of public housing agencies; 28= Speculative measures on property sales through taxes; 29= Taxation on property or capital gains for housing supply; 30= Energy efficient design / installation of energy efficient features; 31= Energy efficient design / installation of energy efficient features; 32= Time limited planning approval/ bonuses on land development

3.2 Framework for Sustainable Affordable Housing

A framework for sustainable affordable housing was developed based on the success factors identified from the literature. As shown in Table 1, many success factors for sustainable affordable housing have been identified from a comprehensive review of extant literature. For a better comprehension, it is worthwhile classifying the various forms of success factors. A study by [Gan et al. \(2017\)](#) and other studies ([Ibem, 2010](#); [Golubchikov and Badyina, 2012](#)) on sustainable affordable housing developed a three-main dimension classification of factors for sustainable housing. These include social sustainability, environmental sustainability and economic sustainability. Based on the comprehensive study conducted by [Gan et al. \(2017\)](#), their classification was adopted for this study but with the addition of another sustainability component – institutional sustainability factors. Though many studies have focussed much on the first three sustainability factors – social sustainability, environmental sustainability and economic sustainability – our review proposes that the success factors for sustainable affordable housing can be categorized into four main groups: social sustainability factors, environmental sustainability factors, economic sustainability factors and institutional sustainability factors. A framework that shows the four main groups for sustainable affordable housing is shown in Fig. 2. As shown in the framework, the four groups are interconnected and should not be assessed in isolation. One or more success factors in one group may have an impact on success factors in another group. For instance, ‘mixed land use’ which is classified under environmental sustainability factors minimizes automobile use by encouraging alternative transportation options (trains, metro, walking and biking) which reduces transportation cost and therefore improves on household savings (economic sustainability) ([Turcotte and Geiser, 2010](#)).

3.2.1 Economic Sustainability Factors

The main objective of affordable housing programs is to enhance housing affordability of low-income households ([Gan et al., 2017](#)). Ensuring the attainment of economic sustainability requires due considerations to both household-enabling factors and developer-enabling factors. Thus, these factors should include both the strategies that enable households and developers to interact in the affordable housing market without economic pressure on any of them. Some of these economic sustainability strategies for an affordable housing market include: access to low interest loans, linking commercial development to approval for funding of affordable housing, provision of housing subsidies, improved supply of low cost developed land by government, adherence to project schedule, compliance with project budget and incentives for developers to include affordable housing in their projects. A transparent system of grants, subsidies, loans and investment programs by the public should be focused on the appropriate stakeholders such as tenants, owners, developers and technology producers. Financial incentives to technology producers could help finance energy efficient technologies ([Turcotte and Geiser, 2010](#)).

3.2.2 Social Sustainability Factors

With regard to sustainable affordable housing, social sustainability highlights the fair distribution and consumption of housing resources with emphasizes on horizontal equity and vertical equity ([Chiu, 2003](#)). Vertical equity is based on “fairness” notion of government taxation. It is an unequal treatment of people whose positions are unequal. The main aim of

vertical equity is for redistribution of wealth or income mostly through taxations. Some of the success factors suitable for ensuring vertical equity include mandatory inclusion of affordable housing in developers' project (Klug et al., 2013), taxation on property or capital gains for housing supply (Agyemang and Morrison, 2017) and speculative measures on property sales through taxes (Mohd Thas Thaker and Chandra Sakaran, 2016). However, horizontal equity is the equal treatment of people whose positions (e.g. income) are equal (Gan et al., 2017). To achieve social sustainability, restrictions should not be imposed on all eligible residents on the distribution of housing resources. Besides, all eligible households should be allowed to participate in the distribution process (Pullen et al., 2009; Gan et al., 2017). Thus, transparency in the allocation of houses is essential for the attainment of horizontal equity (Mukhtar et al., 2017; Zhang and Zhou, 2011). Another social sustainability aspect required for affordable housing is an increased residential take-up or demand among potential residents or households (Adabre and Chan, 2018). Residential take up is mostly influenced by the quality of the housing facility and its neighbouring environment since these lead to user's residential satisfaction (Chiu, 2003; Ibem and Azuh, 2011). Therefore, some of the additional success factors for social sustainability include adherence to quality design of affordable housing, good location for housing projects, adequate infrastructure supply by government, monitoring defects and conditions of completed houses, adequate maintenance of existing houses and adequate accessibility to social amenities (Gan et al., 2017; Oyebanji et al., 2017; Winston, 2010). Besides, for the attainment of social sustainability, the quality designs of affordable housing should reflect the cultural values of the residents (Ibem and Azuh, 2011).

3.2.3 Environmental Sustainability Factors

Environmental sustainability factors concern issues related to climate change and reduction of greenhouse gas emission. These objectives can be achieved by adopting various green building technologies such as energy efficient installation (e.g. implementation of energy-efficient lighting systems, implementation of energy-efficient windows, application of energy-efficient HVAC system, utilization of energy-efficient appliances, adoption and implementation of solar technology for electricity generation, an integral design of building for the utilization of both natural lighting and electric lighting technology) (Darko et al., 2018). Water efficiency could be achieved through the installation of water efficient features (e.g. installation of water-efficient appliances, rainwater harvesting technology and installation of appliance for reclaiming grey water) (Darko et al., 2018). Besides, some of the factors for environmental sustainability include land use policies. Among these land use policies include mixed land development / mixed land use, high density affordable housing development / compact development. Aside the social benefits (adequate accessibility among households) and economic benefits (reduces commuting cost of residents) of land use policies, they also reduce greenhouse gas emission and energy demand due to shorter commuting distance (Gan et al., 2017; Isalou et al., 2014). Adaptable design and construction of affordable housing is also among the strategies for environmentally friendly affordable housing (Turcotte and Geiser, 2010). Adaptable design satisfies the transient needs of households and therefore, prevents illegal building appendages which disrupts the beauty of the environment as well as consumes more resources (Adinyira and Anokye, 2013; Pullen et al., 2009).

3.2.4 Institutional Sustainability Factors

Though in Ibem and Azuh (2011), cultural policies were highlighted in addition to the other sustainability factors, Burford et al. (2013) argued that cultural policies are relevant within the "context" of Education for Sustainable Development (ESD). In that perspective, the cultural pillar plays a significant role in acknowledging and appreciating different global views, local

languages, identities and enhancing discussions and debates. However, with regard to sustainable affordable housing, the additional sustainability factors are the institutional factors. These factors deal with interpersonal processes such as communication and co-operation, which result into information and systems of rules governing the interaction of members of a society (Spangenberg, 2002). The institutional sustainability factors include institutions such as organizations. It also comprises of institutional orientations (for example norms) and institutional mechanism (such as formal systems of rules and procedures which could be social, political, legal or administrative) (Burford et al., 2013; Spangenberg, 2002). Furthermore, institutional sustainability factors include the human competencies of the institutions for housing delivery (Gudiene et al., 2013). Therefore, some of the institutional sustainability factors are as follows: institution orientation and mechanism such as stable macro-economic system, stable political system, effective private sector participation, formulation of sound housing policies and political will and commitment to affordable housing. The human-related factors of institutional sustainability factors include good co-ordination among project participants and sufficient staffing of public housing agencies.

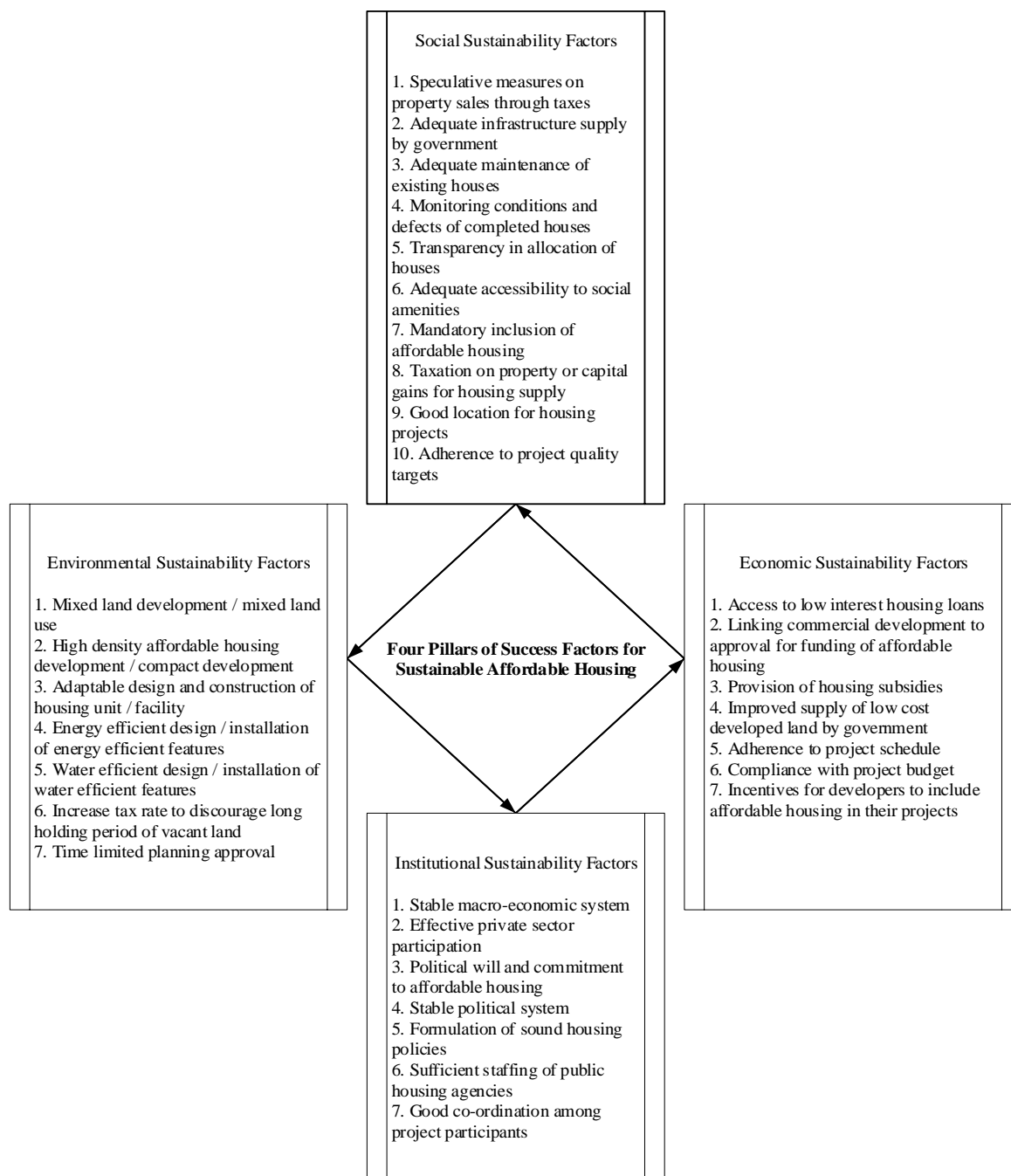


Fig. 2: Framework for Sustainable Affordable Housing

3.3 Determining the Criticality of the Success Factors –Recommendation for Future Study

Though various success factors have been suggested from extant literature for improving the sustainability of affordable housing, there are many issues on the criticalities of these success factors. Typical examples are government financial subsidies in South Africa and planning regulations policies in UK (Ganiyu et al., 2017; Norris and Shiels, 2006). For instance, in a study conducted by Ganiyu et al. (2017), it was concluded that government financial subsidies which were provided to low income households to improve housing demand, were abused by the beneficiaries and did not improve on the affordable housing provision to low income

earners. Besides, [Gurran et al. \(2015\)](#) acknowledged that government grants and subsidies which are incentives to overcome housing affordability barriers could also inflate housing price or rent. With regard to land planning for affordable housing, whereas some studies have advocated for its continual application to enhance affordable housing supply ([Agyemang and Morrison, 2017](#); [Whitehead, 2007](#)), other studies have revealed that the land planning policy has shortcomings in addressing the housing demand and needs of the population ([Cheshire and Leven, 1986](#); [Bramley, 2007](#)). Similarly, in [Norris and Shiels \(2006\)](#), it was argued that planning regulations hinder developers in their pursuit for housing supply. It leads to delays, generates inefficiencies and uncertainties in the provision of new housing ([Ball, 2010](#)). On infrastructure supply, it was argued in [Chi-man Hui \(2004\)](#) that the development of affordable housing in the rural areas is severely constrained by the lack of infrastructure. However, public investment in infrastructure supply could become capitalised in houses and land values leading to price unaffordability of housing ([Gurran et al., 2015](#)). On financial and macro-economic success factors, it was claimed in [Prime-Stat \(2018\)](#) that high interest rates and high treasury bill rates could abysmally affect the securing of long terms fund for affordable housing projects. However, volatility arising from speculation in a period of low interest rates could increase housing prices ([Gurran et al., 2015](#)). Though it is acknowledged that the relevance of the success factors is not based on their individual efficacy but interaction among them and considering the many controversies on the efficacy of the success factors, it is essential to find out the critical success factors for sustainable affordable housing.

4. Conclusions

A corpus of research articles have addressed many aspects of factors for success sustainable affordable housing market. However, a few review studies exist on summarizing these numerous studies and pointing out direction for future study. This is important in order to alleviate the current and anticipated affordability crisis. Accordingly, this study aimed to (1) identify the success factors and to develop a framework for sustainable affordable housing market (2) identify knowledge gap and make recommendation for future study. To achieve these objectives, a systematic review of the literature was conducted on research articles retrieved from databases such as Web of Science, Scopus and Google Scholar. Twenty-six articles were identified from the systematic literature review. Through manual content analysis, thirty-two success factors were identified and used to developed a framework. The framework of success factors for sustainable affordable housing consists of four main groups: economic sustainability factors; social sustainability factors; environmental sustainability factors and institutional sustainability factors. It was also found out from the literature that there are controversies among researchers on the criticalities of the identified success factors for sustainable affordable housing.

This review study has some limitations worth noting. It was manually conducted with a restriction on the number of articles included for the study. Only research articles published within the past two decades (1999 – 2018, inclusive) were included in this study with further restriction to only articles published in English language.

Though the study has limitations, there are vital contributions of the findings of the study. The findings of the study have contributed to filling the knowledge gap in literature by summarizing existing studies and developing a research framework for sustainable affordable housing market. Besides, the list of success factors provides policy options from which various policy makers i.e. governments and international organizations could select the appropriate success factors for improving sustainable affordable housing market both locally and globally. Furthermore, the developed framework serves as a guide to policy makers to ensure sustainable development in all aspects while providing affordable

housing. Theoretical, the findings of the study provide direction for further study. First, considering the polemics among researchers on the criticalities of these success factors, further studies could be conducted to identify the critical success factors (CSFs) from the list of success factors stated in this study. Besides, a study could be conducted on how the success factors in this study relate with the target outcomes of sustainable affordable housing market.

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