

Framework to Enhance the Performance of Small-Scale Construction Firms through Available Support Programmes in Nigeria

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Abstract:- Small-scale construction firms (SSCFs) are the majority players in most construction industries and improvement in their performance will have a major impact in the overall performance of the construction industry and the sustainable development of a country. Many researchers had proposed various measures and support programmes, however, the outcome of the implementation have been inconsistent. Therefore, this study aims to review the available control and support measures towards improving, the performance of small-scale construction firms. The study adopted a mixed methodology involving focus group and questionnaire survey of 125 small-scale construction firms undertaking the federal government mass housing projects in the seven North-West states of Nigeria. The data was analysed using content analysis, descriptive statistics and principal component analysis (PCA). The study identified fourteen (14) measures comprising six (6) internal such as; skills and technology acquisitions, effective marketing strategy, vision and innovation and 8 external measures to be implemented by government and other stakeholders that includes, increase patronage, economic and fiscal policies that support SMEs development. The study developed a framework to guide towards improving performance and development of small-scale construction firms.

Key words; small-scale construction, firms, performance, measures and support programmes

I. BACKGROUND OF THE STUDY

Currently in most developing countries including Nigeria, organized small-scale contractors support programmes are lacking, as in other countries like China, Singapore, Malaysia and South Africa that have implemented such programmes and reaping huge benefits from it. (Ofori 1993, 1998, 2015; Ogunlana *et.al* 2003; Bala *et.al* 2009, Thawala and Phaladi 2009, Yan, 2015 and Fatai, 2011). Therefore, strategic adoption of small-scale construction firm's development framework in Nigeria will create a culture of continuous improvement and responds earnestly to the globalization effects facing local contracting firms.

Faniran (2008) noted that, in a developing country like Nigeria, which is still in the process of providing adequate social amenities such as educational and health care facilities as well as decent housing for its teeming populace, the

construction industry has an important role to play. While Dlungwana and Rwelamila, (2016) surmised that, small and medium size contractors comprise by far the largest proportion of contractors in the construction industry of developing countries and though only employ few permanent staff of less than ten per firm, they are the largest employer of labour next to agriculture (Raghavan and Kumar, 2015) in most developing countries. Furthermore, Peter *et.al* (2011) contended that, these small-scale firms provide a structural base to the economy and determine the productivity of investment and accordingly the rate of development in decentralized and rural areas of the economy. The contribution of the small-scale construction firms to economic development had been widely recognized by previous researchers such as Aremu (2015), Thwala, and Phaladi (2009). This is an indication of the significance of SSCFs within the construction industry and the economy of Nigeria.

Construction firms can be distinguished from each other, through various means such as, the size of annual turnover, number of employees, plants and equipment holding, capacity and capability standards. However small-scale construction firms hardly employ more than 25 workers with virtually no construction plant and equipment, while their productivity and performance remains relatively low due to cost and time overruns, coupled with poor workmanship (Bilau *et.al*, 2015, Fatai, 2011 and Ali 2010).

However, small and medium scale enterprises are very vulnerable and their failure rate is so high that no nation can afford to ignore it. Aremu (2015) noted that, 70 per cent of small enterprises in Nigeria failed within the first five years of operation. Small-scale construction firms have areas of key strengths as noted by Thawala and Philadi, (2009) such as; relatively low skills and resources are required for start-ups but also several significant areas of weaknesses and problems as surmised by (Bala *et.al*, 2009, Aremu, 2015, Bilua *et.al*, 2015, Fatai, 2011). Many of them are not only very weak and fragile but have little prospect of growth and development.

Studies by Dlungwana and Rwelamila, (2016) noted that, while globalization may have benefits for a country's

economy, such as reduced prices, high standards of quality and improved technology and skills, it can have serious negative consequences for the construction industries of developing countries. Unless local contractors succeed in raising performance standards relative to foreign competitors, the current situation will worsen.

Dlungwana and Rwelamila, (2016) further noted that, there is lack of well-structured training and mentorship programme within the construction industry that, will equip the small-scale construction firms with technical and managerial work force towards sustainable development. While, Ofori, 1993; Bala *et.al*, 2009 and Dlungwana and Rwelamila, 2016 postulates that, because of the high failure rate of local contractors and lack of competitive advantage, most construction work is undertaken by foreign contractors, with very limited participation by the local industry, thus further depleting the base of viable local contractors. These firms prefer to employ expatriates workers even where qualified local professionals work force is available and imports other construction resources as while.

There are also the problems of registration and classification of contractors by various government agencies as noted by Eyiah (2004) that, contractor classification system in most developing countries is highly controversial, cumbersome and could hinder the development of small contractors. This was corroborated by Agboade (2016) that, 34.2 million of small and medium scale enterprises (MSEs) operating in Nigeria did not register with the Corporate Affairs Commission (CAC).

Fasola (2016) lamented that, the Nigerian government patronize foreign contractors because of the vacuum created by the failure of local contractors to bid for advertised construction works, and there is over legislation of procurement system, which make the process cumbersome, costly and result in serious delays. Performance constraints' facing the small scale construction firms as noted by Mbugua *et.al*, (1999), Bala *et.al*, (2009), and NCC, (2005) includes; inadequate capacity, capability, repeated delays, cost overruns, erratic work opportunities, poor productivity and quality, unfavourable tax system, poor working environments, corruption, use of outdated technologies and practices, lack of supporting regulations/policies and the poor state of the economy.

Past measures formulated and implemented by successive Nigerian governments to improve the performance of indigenous contractors as noted by Adams (1998), Bala *et.al* (2009), Osotimehin *et.al*, (2012), and Ofori and Lean, (2001) have achieved little success in helping the indigenous contractors to develop as indigenized foreign firms still dominate the industry. Ogunlana *et.al* (2003), Yan, (2015), Thawala and Phaladi, (2009), Ofori and Lean (2001) had suggested approaches that had worked successfully in countries such as Singapore, Malaysia, China and South Africa.

However, because of peculiar problems, priorities, stages of infrastructure and national development a successful combination of policies in a specific country might not be applicable to or successful in another country. Furthermore, Abu-Bakr *et.al* (2011) noted that, factors affecting growth differ between small and large firms and from country to country depending on economic, geographical and cultural differences. Therefore, each country must ascertain it is peculiar problems and priorities and apply appropriate policies to solve them.

Approaches, Components and Objectives of Construction Firms Development Programmes

Fox (2003) reported that over the last fifty years there has been a series of major studies concerned with the problems and issues of construction industries both nationally and internationally. Developing the capacity of the industry involve, improving its ability to implement the investment programme with as much of the local resources (men, materials, machinery and methods) as possible so that, the value-added in construction and its backward linkages is optimum. The value-added is a useful measure for evaluating the capacity of the industry. The efficiency of the industry depends on the effectiveness of the industry's participants (contractors, owners, consultants, material suppliers, etc.) and its business environment (policies, procedures, incentives, facilities, etc.) in using resources most productively. Thus, cost effectiveness, completion time and quality of construction are useful measures of efficiency. (Kirmani, 1988; Abdullah *et.al*, 2011).

Ogunlana *et.al* (2003) and Ofori (2015) highlighted that, technology development, corporate development, institution building development, materials development, human resource development, documentation, procedures and practices improvement and development of conducive operating environment are all components to the development of construction industry in developing countries.

Different researchers (Kagioglou *et.al*, 2001; Beatham, 2003; Bassioni *et.al*, 2005; CIDB, 2011; Dapaah and Musanda, 2014) had noted that, developing countries have different objectives for designing and implementing construction industry development programmes. Some development programmes aimed to develop the country's construction industry into a world class, innovative, knowledgeable global solution provider. While other development initiatives were designed to improve the productivity of the construction industry by re-inventing it is processes, procedures and practices. There are also programmes to improve the overall performance of contractors in an economy, to improve construction firms' ability to compete, to provide opportunities and grow small contracting enterprises. Others programmes are to improve performance of rural contractors, to promote use of efficient labour intensive methods and programmes based on affirmative action.

Strategy and Challenges in Implementing Contractor Development Programme

The National Contractor Development Programme (NCDP) of South Africa produced by the Department of Public Works and Construction Industry Development Board (CIDB) in 2011 recommends that, the adoption of procurement strategies that meet the delivery needs of the client and the development needs of the contractors through work continuity. This is achieved using appropriate criteria to target and select contractors who have the ability to improve and progress and rewarding of contractors who perform satisfactorily, facilitation of access to finance for contractors, ensuring prompt payment to contractors and provision of appropriate contracting conditions to support contractor development.

There is need for provision of standardized designs and specifications, training opportunities with outreach programmes for contractors to improve their business. The use of joint ventures, sub-contracts and other appropriate mechanisms to facilitate continuous performance improvement by contractors and providing opportunities for practical training for learners of projects. As well as, providing and facilitating access to bursaries, learner ship grants and other funding opportunities for learners.

The challenges facing Contractor Performance Improvement Programmes have been the subject of numerous research studies (Ofori, 1999, 2001; Bala *et.al.*, 2009; Dapaah and Musanda, 2014). While CIDB (2011) noted that, the main impediments towards the success of these programmes are; difficulty in selecting the appropriate entrants into a programme, lack of experience in the areas of technical and managerial skills by construction firms, inadequate training and difficulties in synchronizing training with workloads. The problems includes poor understanding of risk, nature and complexity of construction by contractors, inadequate access to finance, trade credits and guarantees, reluctance to employ qualified personnel by firms usually due to financial constraints while compromising quality over speed and budgetary considerations. There are also the issues of low profit margins in the industry, which reduces the viability of contractors and lack of commitment by contractors to the objectives of contractor development. In addition, there is difficulty in creating a culture of entrepreneurship amongst contractors and fluctuating industry workloads. Furthermore, there are issues of institutional challenges such as; limited training institutions, shortage of appropriate training materials, poor funding, lack of coordination and efficient monitoring and evaluation system for the programmes.

Therefore, designers, implementers and contractors participating in future construction firms' development programmes need to strive towards avoiding these challenges.

Key success factors for Contractor Development Programmes

The CIDB (2011) highlighted that for any construction firms' development programme to succeed; there is need for, political support and strong championing of the programme, setting of appropriate targets and commitment by the organization, allocation of sufficient budget and sufficient management resources to drive the programme. In addition, there is need for clearly defined objectives, goals and targets that the programme must achieve, which should include the developmental objectives of the programme and its targets. The programme should be flexible such that it accommodates the varying needs of contractors at different levels of development while, promoting the adoption of industry best practices as well as, consistent monitoring and reporting of achievements.

The model should further integrate of the development activities of all stakeholders, from government to private sector, such that procurement, training, mentorship and performance assessment activities are supposed to complement. Thus, there is the need for future construction firms' performance improvement programmes to put into consideration these important success requirements.

Past Construction Firms Performance Improvement Frameworks / Models Developed

Measures and Frameworks developed by various stakeholders to assist in improving the performance of construction firms and the industry in general includes, Yan (2015) framework based on the industry organization approach and the concept of competitive advantage. The framework proposed based upon the identification of developing and creating core capability (entrepreneur, marketing and innovation), competitive strategy (cost, quality, delivery and partnering) and industry structure (market entry barriers and competitive pressure).

However, Yan (2015) framework fails to integrate the development activities of all the stakeholders involve in the development of SMEs and lack the flexibility, mains of evaluation and monitoring of the programme as recommended by Dlungwana and Rwelamila (2016).

Hauptfleisch *et.al.*, (2007) proposed integrated emerging contractor development model with key components that includes, mentoring of contractors and introduction of total quality management. Role players within the construction industry and broad institutions within business environment that could positively contribute to development of the small-scale construction firms were included in the model.

However, Hauptfleisch *et.al.*, (2007) model emphasis structured more towards training and mentorship while limiting the relevance of legislative policy and regulations. The programme further, only target a few selected emerging contractor, therefore limiting the impact of the programme

and creating dependence rather than autonomy as noted by Larcher, (1999) and Shifidi, (2012).

CIDB, (2011) of South Africa proposed a development framework with key principles, which emphasizes on government, its entities and partnerships, as well as other role players to use procurement of infrastructure in order to achieve contractor development. The programme enroll contractors based on clearly defined entry criteria and provide targeted developmental support, to achieve clearly defined developmental outcomes. Contractors enter the programme based on predefined criteria and receive support that enable contractors exit the programme on the basis of achieving predefined criteria relating to skills, qualifications, certification, sustainability, quality, etc.

The CIDB framework has similar shortcomings as the model proposed by Hauptfleisch *et.al*, (2007) because of the limited number of contractors enrolled for the programme and lead to dependency syndrome, whereby contractors find difficult to survive and flourish once they exit the programme.

Fox, (2003) identified eight key factors as active in current development of the construction industry while six factors as important in future development in both developed and developing countries but having different strength depending on the country's emphasis on, overseas support and the extent to which its industry takes responsibility for its own improvement. Using the future development factors, Fox (2003) proposed a model for construction industry development.

However, Fox, (2003) model mainly based on growth factors failed to integrate all stakeholders that are involved in the development of construction industry and lacks flexibility and mains of evaluation and monitoring of the programme as recommended by Dlungwana and Rwelamila (2016).

Ozlem (2010) noted that Porter in 1990 studied the construction industries of 10 nations, which includes Denmark, Germany, Italy, Japan, Singapore, South Korea, Sweden, Switzerland, the United Kingdom and the United States. He developed a new analytical framework, called "the diamond framework" which aims to capture the major determinants of competitive advantage for construction firms together with their interactions with each other.

However, Porter (1990) Diamond Framework failed when Ozlem in 2010 applied it to the Turkish construction industry. Results indicates that, the success of Turkish contractors' in international markets was attributed to, labour cost advantages, geographic and cultural proximity to several promising markets. This is contrary to the claims of diamond framework based on 'factor conditions' and 'chance' events.

These inadequacies necessitate continues research and development of more enhanced frameworks and models that

can improve the performance and sustenance of small and medium scale construction firms.

Small Scale Construction firms' Development Measures in Nigeria

Adams, 1998 and Bala *et.al*, 2009 in their studies of factors affecting the growth of local construction firms in Nigeria identified several measures that are required to accelerate the growth of the local firms. These measures includes, creating favorable business environment, increased government patronage, government policies and support. Others measures highlighted are; improving access to plant and equipment, enhancing product quality, contractor performance monitoring, Strategic planning, increasing production capabilities, upgrading technical expertise, research and development. Furthermore, continuous work-flow, upgrading the managerial expertise, provision of long-term loans, creating marketing strategies, hiring and training of qualified professionals, employing more professionals, technology acquisition and transfers, improving access to loans, tender preference to local firms, reservation of contracts, reduction of taxes by government and achieving ISO 9000/14000 are part of the reforms.

The recent local content bill of 2014 for construction services as noted by NBS (2015) meant to give indigenous construction companies a level playing field as their international counterparts, as well as, making it easier for local businesses to thrive in the construction industry have not been fully implemented.

However, a close look at the measures revealed that, most are directly or indirectly related to government i.e. measures outside the control of the firms. This shows the importance attached to government role in the development of local construction firms. This fully supports the findings in previous studies by Ofori and Lean, (2001). The success of the internal measures will largely depend on the success of the external measures.

Objectives of the Study

- i. To assess the control measures enshrined in the practice of small-scale construction firms.
- ii. To identify external support measures that can improve the performance of small-scale construction firms.
- iii. To develop a framework to enhance the performance of small-scale construction firms.

II. METHODOLOGY

A mixed method approach was adopted to identify measures and strategies for the development of small-scale construction firms. In addition to literature review, focus group discussion was conducted with the management staff of 10 small-scale construction firms, which helped to confirmed findings from the literature, and add emerging issues that can improve the

performance and development of small-scale construction firms. Subsequently, questionnaire was administered to 125 small-scale construction firms involved in the federal government mass housing project in the seven North-West states of Nigeria. The firms sample size and sampling techniques were in accordance to Raghavan and Kumar (2015) and seek their opinions on the most important measures, that if implemented can improve performance and development of the small-scale construction firms. 115 questionnaires were duly completed and returned, which were analyzed using descriptive statistics and principal component analysis (PCA). Assessment of data suitability for factor analysis, extraction and rotation were carried out through Cronbach's alpha test, Kaiser-Meyer-Olkin (KMO) measure

of sampling adequacy for overall data set and KMO measure for each individual variable based on George and Mallery, (2010).

III. RESEARCH FINDINGS AND DEVELOPMENT OF THE FRAMEWORK

82 measures that can improve performance of small-scale construction firms identified from the literature were confirmed and classified into 27 Internal Measures (IM) and 55 External Measures (EM) through focus group discussions. Descriptive statistics using mean and standard deviation helped to establish the importance of each measure and the results are presented in Tables 1 and 2.

Table 1. Internal Measures to be implemented by construction firms

S/NO	Internal Measures (IM)	Valid	Mean	Std. Deviation
IM1	Long term financing plan	115	4.27	0.50
IM2	Introduce efficient financial management	115	4.37	0.64
IM3	Training & education of workers	115	4.23	0.64
IM4	Employ more qualified manpower	115	4.04	0.78
IM5	Learn entrepreneurship skills	115	4.36	0.60
IM6	Introduce policies that retain workers	115	4.11	0.67
IM7	Good planning & programme of works	115	4.17	0.60
IM8	Acquire plants & equipment	115	4.82	0.39
IM9	Introduce use of information technology	115	4.20	0.70
IM10	Good tender analysis & estimates	115	4.15	0.72
IM11	Reduce construction time	115	3.76	1.06
IM12	Improve contractors image & attitudes	115	4.10	0.79
IM13	Implement appropriate production technology	115	4.20	0.69
IM14	Establish efficient supply chain management	115	4.12	0.68
IM15	Inculcate competitive spirits	115	4.08	0.78
IM16	Develop long term strategy	115	4.28	0.57
IM17	Establish employee motivation schemes	115	4.75	0.44
IM18	More strict supervision & quality control	115	4.28	0.60
IM19	Improve safety measures on sites	115	4.12	0.66
IM20	Improve quality workmanship & products	115	4.20	0.60
IM21	Use of prefabrication & standardized production methods	115	4.17	0.69
IM22	Establish good materials management on sites	115	4.27	0.65
IM23	Establish good & honest relationship with clients	115	4.29	0.62
IM24	Establish good marketing strategy	115	4.25	0.62
IM25	Use of automated construction methods	115	4.08	0.70
IM26	Use of sustainable construction materials	115	4.25	0.57
IM27	Use of new technology (3D printing)	115	4.14	0.79

Table 2 External Measures that could improve Performance

S/NO	External Measures (EM)	Valid	Mean	Std. Deviation
EM28	Reduction of interest rates by banks	115	4.05	0.72
EM29	Introduce soft conditions for obtaining bonds/guarantees	115	4.08	0.68
EM30	Reduce costs for obtaining bonds/guarantees	115	4.04	0.81
EM31	Prompt payment for work done	115	4.29	0.72
EM32	Increase patronage by governments	115	4.65	0.53
EM33	Encourage subcontracting by large firms	115	4.03	0.79
EM34	Encourage joints ventures/partnering	115	4.03	0.85
EM35	Less stringent prequalification requirement	115	4.20	0.73
EM36	Reduce cost of doing business	115	3.86	0.99
EM37	Increase percentage of advance payment	115	3.86	0.92
EM38	Implement govt. policies that support SMEs development	115	3.89	0.89
EM39	Introduce access to materials credit-supplies	115	3.94	0.86
EM40	Introduce policies that minimize currency fluctuation	115	3.99	0.72
EM41	Adequate compensation for work done	115	3.93	0.83
EM42	Implement contract conditions that support SMEs development	115	3.90	0.82
EM43	Provide construction management training to SMEs	115	4.28	0.73
EM44	Introduce contractor mentoring system	115	3.88	0.87
EM45	Research and development	115	4.86	0.35
EM46	Provide professional advisers and consultants	115	4.00	0.75
EM47	Corporate development of SCCF	115	3.95	0.80
EM48	Eliminate multiple taxation	115	4.83	0.38
EM49	Better co-ordination btw. government agencies	115	4.04	0.74
EM50	More awareness by govt. of the nature of construction industry	115	4.03	0.67
EM51	Streamline regulatory agencies	115	4.03	0.67
EM52	Introduce efficient registration & classification system	115	4.02	0.83
EM53	Minimize political influence on govt. policies	115	4.03	0.78
EM54	Creating favorable business environment	115	4.16	0.73
EM55	Proper use of foreign aids	115	4.12	0.77
EM56	More flexible aid agencies procedures & conditions	115	4.16	0.70
EM57	Focused industry support measures	115	4.28	0.64
EM58	Strong institutions and efficient systems	115	4.15	0.76
EM59	Political stability and peace	115	4.16	0.73
EM60	Share risks more appropriately	115	4.14	0.75
EM61	Reduce bureaucracy in contract administration	115	4.07	0.79
EM62	Make specifications more precise and clear	115	4.14	0.87
EM63	Improve design & detailing	115	4.06	0.78
EM64	Use selective method of bidding	115	3.87	0.82
EM65	Avoid much focus on lowest bids price	115	4.06	0.82
EM66	Tendering preferences to small contractors	115	4.39	0.67
EM67	Improve communications between project teams	115	4.16	0.67
EM68	Use performance measurement & bench marking tools	115	4.24	0.60
EM69	Minimize changes & variations during construction	115	4.13	0.68
EM70	Minimize client involvement during construction phase	115	4.03	0.75
EM71	Eliminates frauds & corruption	115	4.76	0.43
EM72	Improve on infrastructure provision	115	4.20	0.69
EM73	Use of local construction materials	115	4.17	0.75
EM74	Contract splitting & phasing	115	4.06	0.74
EM75	Establish project continuity	115	4.18	0.76
EM76	Improve cross industry collaboration	115	4.17	0.66
EM77	Establish construction industry development board	115	4.68	0.50
EM78	Implement provision of national building code	115	3.95	0.80
EM79	Strict budgetary planning & implementation	115	4.12	0.74
EM80	Strong trade association	115	4.17	0.58
EM81	Introduce e-commerce	115	3.76	0.94
EM82	Reduce conflicts and disputes during construction	115	4.09	0.78

Table 1 indicates that, the respondents' were of the opinion that acquiring plants and equipment by small-scale construction firms with a mean score of 4.82 was the most important internal measure that are expected to be implemented by small-scale construction firms in order to improve their productivity and performance. While, Table 2 showed that, research and development (4.86) is the most important external measure that is expected to be implemented in order to improve performance of small-scale construction firms.

Furthermore, looking at Tables 1 and 2 respectively and considering the objective of identifying the most important measures that when implemented can improve the performance of small-scale construction firms. Furthermore, in line with the decision criteria earlier adopted (that a mean score of above 3.0 as having an effect) all the 82 measures will have to be accepted at this stage as important for

performance improvement and development of the small-scale construction firms. However, these are considered too large for inclusion in the development framework. Thus, in order to obtain reasonable number of measures data reduction technique using PCA was applied.

The PCA as described in the methodology was used to extract 13 components based on the most interpretable solution explaining 64.45% of the variance (Table 4). However, looking at components 9 and 13, EM32 (increase patronage by government and EM66 (tendering preferences to small-scale construction firms) and noting that EM67 loads more strongly on component 1 with 0.618 as against 0.485. Therefore, components 9 and 13 were merged. Thus retaining 12 components with 6 internal and 8 external measures that if implemented can improve performance of small-scale construction firms and results presented in Tables 3, 4 and 5.

Table 3 Rotated Component Matrix^a 13 Components Measures

S/N	Measures	Component												
		1	2	3	4	5	6	7	8	9	10	11	12	13
IM12	Improve contractors image & attitudes	.744												
EM53	Minimize political influence on govt. policies	.743												
EM33	Encourage subcontracting by large firms	.742												
EM62	Make specifications more precise and clear	.737												
EM35	Less stringent prequalification requirement	.668												
EM60	Share risks more appropriately	.655												
EM61	Reduce bureaucracy in contract administration	.654												
EM34	Encourage joints ventures/partnering	.634												
EM54	Creating favourable business environment	.633												
IM14	Establish efficient supply chain management	.631												
EM37	Increase percentage of advance payment	.625												
IM13	Implement appropriate production technology	.622												
EM67	Improve communications between project teams	.618												.485
EM50	More awareness by govt. of the nature of construction industry	.593												
IM10	Good tender analysis & estimates	.579												
EM36	Reduce cost of doing business	.574			.495									
EM52	Introduce efficient registration & classification system	.569												
EM58	Strong institutions and efficient systems	.549	.445											
EM49	Better co-ordination btw. government agencies	.549												
EM65	Avoid much focus on lowest bids price	.533												
EM64	Use selective method of bidding	.503		.457										
EM63	Improve design & detailing	.501												
EM59	Political stability and peace	.500												
EM56	More flexible aid agencies procedures & conditions	.468												
EM51	Streamline regulatory agencies	.454												
EM57	Focused industry support measures	.431												
EM75	Establish project continuity		.773											
EM69	Minimise changes & variations during construction		.694											
EM76	Improve cross industry collaboration		.678											
IM27	Use of new technology (3D printing)		.639											
EM79	Strict budgetary planning & implementation		.618											

EM70	Minimise client involvement during construction phase		.579										
EM74	Contract splitting & phasing		.572										
EM31	Prompt payment for work done		.570										
IM26	Use of sustainable construction materials		.538										
EM81	Introduce e-commerce		.531										
EM78	Implement provision of national building code		.530										
EM36	Reduce costs for obtaining bonds/guarantees		.470							.403			
IM25	Use of automated construction methods		.454										
EM46	Provide professional advisers and consultants		.704										
EM44	Introduce contractor mentoring system		.644										
IM11	Reduce construction time	.437	.613										
IM6	Introduce policies that retain workers		.561										
EM47	Corporate development of SCCF		.514										
IM15	Inculcate competitive spirits		.453										
EM39	Introduce access to materials credit-supplies			.766									
EM38	Implement govt. policies that support SMEs development			.671									
EM40	Introduce policies that minimise currency fluctuation			.652									
EM41	Adequate compensation for work done	.430		.642									
IM3	Training & education of workers				.677								
IM9	Introduce use of information technology				.588								
IM4	Employ more qualified manpower		.476		.558								
EM43	Provide construction management training to SMEs				.510								
EM42	Implement contract conditions that support SMEs	.458			.484								
IM24	Establish good marketing strategy					.682							
IM23	Establish good & honest relationship with clients					.650							
EM72	Improve on infrastructure provision	.442				.574							
IM20	Improve quality workmanship & products					.469							
EM82	Reduce conflicts and disputes during construction						.667						
EM80	Strong trade association						.526						
EM73	Use of local construction materials					.493	.512						
IM16	Develop long term strategy							.687					
IM18	More strict supervision & quality control							.642					
IM19	Improve safety measures on sites							.540					
EM68	Use of performance measurement and bench marking tools								.673				
EM32	Increase patronage by governments								.664				
IM17	Establish employee motivation schemes								.638				
EM48	Eliminate multiple taxation								.566				
EM28	Reduction of interest rates by banks	.400								.674			
IM1	Long term financing plan									.633			
EM29	Introduce soft conditions for obtaining bonds/guarantees									.627			
IM5	Learn entrepreneurship skills										.558		
EM35	Proper use of foreign aids										.521		
IM8	Acquire plants & equipment										.500		
IM2	Introduce efficient financial management										.453		
EM45	Research and development											.689	
EM71	Eliminates frauds & corruption											.628	
EM77	Establish construction industry development board								.460			.510	
EM66	Tendering preferences to small contractors												.743

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

Table 4 Total Variance Explained: 13 Components Measure

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	23.618	28.803	28.803	23.618	28.803	28.803	12.717	15.509	15.509
2	4.954	6.042	34.845	4.954	6.042	34.845	7.019	8.560	24.069
3	3.490	4.256	39.101	3.490	4.256	39.101	4.859	5.925	29.994
4	3.191	3.891	42.992	3.191	3.891	42.992	4.194	5.115	35.109
5	2.662	3.247	46.239	2.662	3.247	46.239	3.286	4.008	39.117
6	2.289	2.791	49.030	2.289	2.791	49.030	3.190	3.890	43.006
7	2.139	2.609	51.639	2.139	2.609	51.639	2.933	3.577	46.583
8	1.935	2.360	53.999	1.935	2.360	53.999	2.772	3.380	49.963
9	1.853	2.260	56.259	1.853	2.260	56.259	2.704	3.297	53.260
10	1.795	2.189	58.448	1.795	2.189	58.448	2.597	3.167	56.427
11	1.742	2.125	60.572	1.742	2.125	60.572	2.369	2.890	59.317
12	1.650	2.012	62.584	1.650	2.012	62.584	2.114	2.579	61.895
13	1.506	1.837	64.421	1.506	1.837	64.421	2.071	2.526	64.421
14	1.480	1.805	66.226						
15	1.383	1.686	67.912						
16	1.232	1.502	69.414						
17	1.221	1.489	70.903						
18	1.113	1.357	72.260						
19	1.071	1.306	73.566						
20	1.019	1.242	74.808						
21	.985	1.201	76.009						
22	.949	1.157	77.167						
23	.930	1.134	78.301						
24	.865	1.055	79.356						
25	.828	1.009	80.366						
26	.814	.993	81.359						
27	.756	.922	82.281						
28	.718	.876	83.156						
29	.692	.844	84.001						
30	.684	.834	84.835						

Table 5. Summary of Identified Measures to Improve Performance

Measure	Measure Title	Variables
EM1	Government intervention	IM12, EM53, EM33, EM62, EM35, EM60, EM61, EM34, EM54, IM14, EM37, IM13, EM67, EM50, IM10, EM36, EM52, EM58, EM49, EM65, EM64, EM63, EM59, EM56, EM51, EM57
EM2	Construction client Intervention	EM75, EM69, EM76, IM27, EM79, EM70, EM74, EM31, IM26, EM81, EM78, IM25
EM3	Corporate Development of SSSF	EM46, EM44, IM11, IM6, EM47, IM15
EM4	Economic and Fiscal policy	EM39, EM38, EM40, EM41, EM36,
IM1	Skills and Technology	IM3, IM9, IM4, EM43
IM2	Marketing Strategy	IM24, IM44, IM20
EM5	Strong trade Association and Conflict Mitigation	EM82, EM80, EM73
IM3	Vision and Innovation	IM16, IM18, IM19
EM6	Increase Patronage and Tax reduction	EM32, EM68, EM48, EM66, EM67
IM4	Establish employee motivation schemes	IM7
EM7	Financial institutions intervention	EM36, EM66, EM48
IM5	Long term financial plan	IM1
IM6	Acquisition of Plants and equipment	IM5, IM8, IM2, EM35
EM8	Anti-corruption / Research and development	EM45, EM71, EM77

Source, field survey (2018)

Table 5 shows that, the management of small-scale construction firms in order to improve performance are

required to, acquire skills, technology as advocated by Yan (2015), Fox (2003), Ofori, and Lean (2001). Design and

implement effective marketing strategy as postulated by Bala *et.al.*, (2009), Abu-Bakr *et.al.*, (2011), WEF (2016), Thwala and Phaladi (2009). Small-scale construction firms need to have a long-term vision and be innovative as recommended by Yan (2015), Fox (2003), Bilau *et.al.*, (2015) and WEF (2016). There is need for the establishment of employee motivation schemes and efficient financial management plan as stressed by WEF (2016), Ali, (2010) and Ofori and Lean (2001). Small-scale construction firms are expected to acquire plants, equipment as asserted by Bala *et.al.*, (2009), Thwala, Phaladi (2009), Abu-Bakr *et.al.*, (2011), and Bilau *et.al.*, (2015).

While, the external measures as indicated in Table 5 are to be implemented by government and other stakeholders in order to improve performance and development of small-scale construction firms are;

EM1- Government Intervention

Government is expected to provide supports in the following areas; provide political stability and peace, creating favourable business environment, implement efficient procurement methods, improve contract documents and conditions, implement good economic and fiscal policies and streamline regulatory agencies as asserted by Bala *et.al.* (2009), Dethier, (2010), Larcher, (1999), Ozlem, (2010), Ofori, (2015), Olayeni and Omuh, (2010).

EM2- Construction Client Intervention

In order to improve performance construction clients are required to ensure, prompt payment for work done, establish project continuity, minimise changes and variations, strict budgetary planning and implementation, minimise involvement during construction, contract splitting and phasing. They should encourage the use of sustainable building materials, use of e-commerce, encourage use of new technology and automated construction methods. This confirmed assertion by Fox (2003), Hauptfleisch *et.al.*, (2007), Larcher, (1999), Ofori and Lean, (2001), Bala *et.al.*, (2009) and Abu-Bakr *et.al.*, (2011).

EM3- Corporate Development of Construction SMEs

There is strong need for corporate development of construction SMEs as recommended by Larcher, (1999), Fox, (2003), Ozlem, (2010), WEF, (2016), Gunhan *et.al.*, (2005) and Ling *et.al.*, (2005). This will encourage development of competitive spirit and allow policies that can retain workers to thrive, thereby improving their performance and reduces overall construction time and cost.

EM4- Economic and Physical Policies that Support SMEs Development

There is need for formulating and implementing economic and physical policies that will assist small-scale construction firms effectively finance construction projects as advocated by Man, (2001), Dethier, (2010), Olayeni and Omuh (2010),

Kirmani, (1988) and Fox, (2003). These can be done via, implementation of policies that minimise currency fluctuation, reducing cost of doing business to SMEs, introduce access to credits supplies and adequate compensation for work done.

EM5- Strong Trade and Professional Association

Establishing strong trade and professional associations as noted by Kirmani, (1988) and WEF, (2016) can assist small-scale construction firms to develop through ensuring that their rights and privileges' are protected. They can also mediate and mitigate the rampant cases of conflicts and litigation in the construction industry as well as encourage the use of local construction materials through collaboration with designers and local manufactures as recommended by Fox, (2003).

EM6- Increase Patronage to Small Scale Construction firms

Increase patronage by government and other corporate clients through tendering preferences to small-scale constructions firms as recommended by CIDB, (2011), Olayeni and Omuh (2010), Bala *et.al.*, (2009), Ozlem, (2010), Dlungwana and Rwelamila, (2016) and Thwala and Phaladi, (2009). This is the most important support that can ensure the survival and development of the small-scale construction firms.

EM7- Financial Institution Intervention

Financial resources is crucial for the success of any project and for small-scale construction firms to survive and improve performance they must be supported financially by financial institutions through the following measures; reduction of high interest rates by banks, reduce cost of obtaining bonds/guarantees and implement soft conditions for obtaining bonds/guarantees. This confirmed assertion by Hauptfleisch *et.al.*, (2007), Larcher, (1999), Olayeni and Omuh, (2010), Thawala and Phaladi, (2009) and Abu-Bakr *et.al.*, (2011).

EM8- Anti Corruption /Research and Development

The measures that need to be implemented under this are; research and development, eliminates frauds and corruption within the construction industry and establish Construction Industry Development Commission (CIDB) to plan and coordinates the implementation of support measures as recommended by Hauptfleisch *et.al.*, (2007), Olayeni and Omuh, (2010), Fox, (2003), WEF, (2016), Bala *et.al.*, (2009) and Kirmani, (1988).

In addition, the study proposed a framework consisting of several levels that includes, Level 1, identify and rank both internal and external constraints affecting the development of small-scale firms. Level 2, design the development programme strategy and objectives. Level 3, design measures to overcome both internal and external constraints. Level 4, identify the most effective government and other stakeholders to provide appropriate measures. Level 5, apply both internal and external measures to small scale contractors. Level 6, evaluate the performance of small scale contractors and if

there is need modify support measures and level 7 monitor objectives and if there is need modify them. and evaluate the programme implementation, strategy and

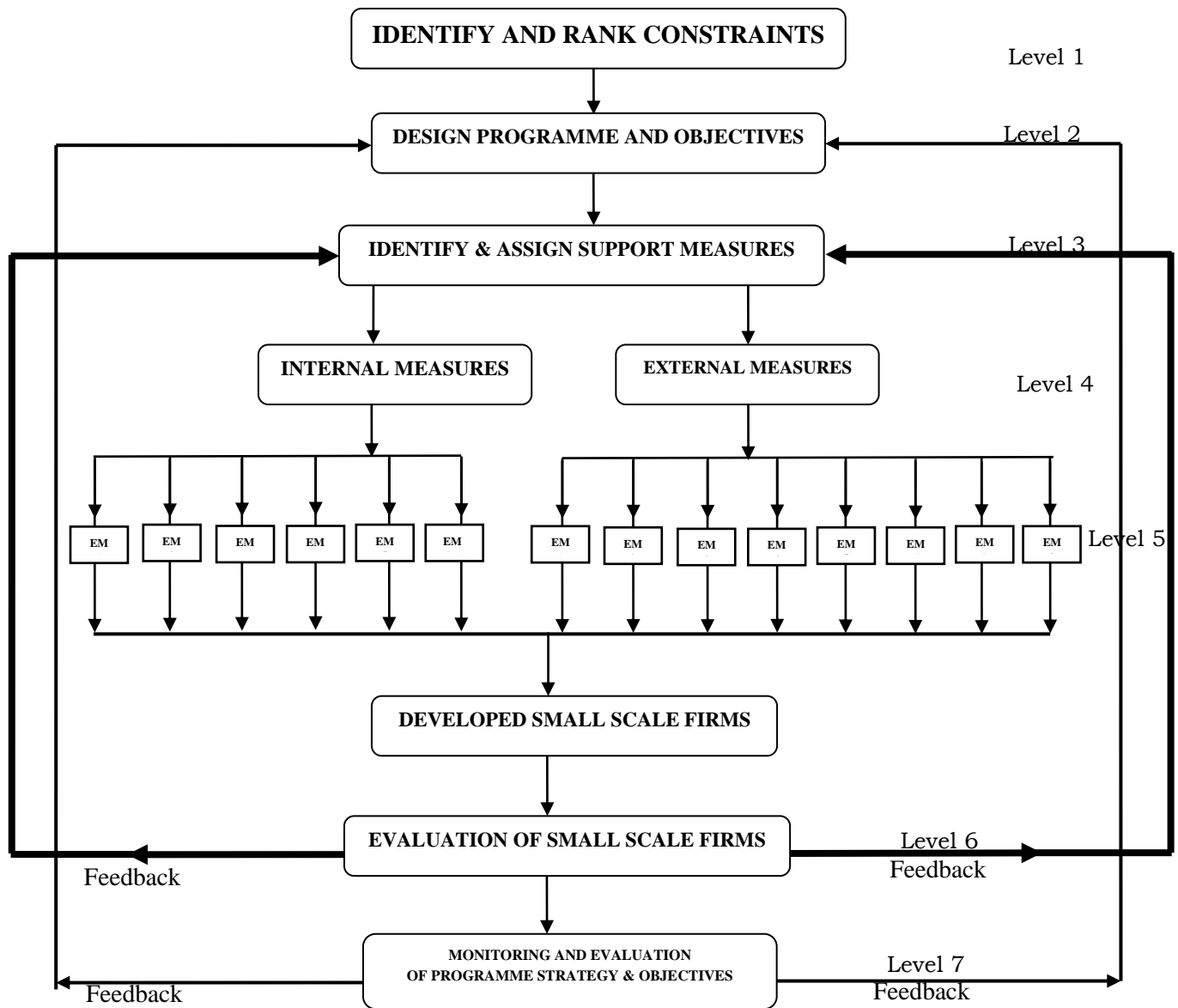


Fig.1 Framework to Enhance the Performance of Small Scale Construction Firms

KEY – IM₁ – IM₆ – Internal Measures

EM₁ – EM₈ – External Measures

IV. CONCLUSION

The study identified internal and external measures that are crucial in improving the performance and development of small-scale construction firms. The developed framework is simple and practical to implement and offered the advantages of integrating all stakeholders in the development of small-scale construction firms and flexibility as to allow the participation of many firms that are able to implement appropriate internal control measures'. The study recommends the establishment of Construction Industry Development Commission (CIDC) that will be responsible for the development of local construction SMEs and education and research institutions should improve on the culture of continuous learning, knowledge creation and sharing.

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