

# **Business Re-engineering Strategic Process Model for Small-Medium Local Contractor's Sustainable Competitiveness: A Case of Tanzania**

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**Abstract:** Re-engineering the construction business process has been regarded as an acceptable management technique for reducing the overwhelmed construction challenges that have ascribed prolonged unsustainable competitiveness for most small and medium local construction firms in less developed countries. This study adopted the business re-engineering philosophy to identify and recommend the Strategic Business Process Model for the sustainable competitiveness of local firms in the domestic competitive environment. The questionnaire and in-depth interview survey were opted to collect the data from 227 respondents sampled through purposive sampling. SPSS 24-AMOS was used to analyze the data and create a structural equation model for sustainable competitiveness. The findings have revealed eleven (11) construction core and three (3) organizational process-related strategies, which suggest that the integration of design ( $\beta_1=0.228, p=0.000$ ), procurement ( $\beta_2=0.091, p=0.003$ ), construction management ( $\beta_3=0.264, p=0.002$ ) and organizational ( $\beta_4=0.068, 00; p=0.004$ ) strategic processes have proved a positive significant in attaining sustainable competitiveness of local firms. The study serves as a valuable empirical mark that provides insight and initial evidence for researchers, policy makers, and stakeholders in understanding potential construction core and organizational process strategies adopted by local firms to attain a competitive advantage.

**Keywords:** Small and Medium Local Contractor, Construction Processes, Business Process Re-engineering, Sustainable Competitiveness, Competitive Strategy

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## **1. Introduction**

The least developed countries (LDC) have envisaged Construction Industry (CI) as the most critical sector for their national economic development [1] as it represents a significant proportion of most countries' Gross Domestic Product (GDP). It provides essential infrastructures, including roads, airports, railways, buildings, schools, and hospitals, to mention a few. The constructed infrastructure performed by potential Small and Medium Local Contractors (SMLC) operating within several construction commercial business environments always enhances productivity performance and stimulates the development of other sectors for national economic growth [2]. Despite its vital

significance to the LDC, the CI has faced different challenges led mainly by globalization and technology evolution which has removed borders and opened fast international construction trade growth. Thus, globalization has accelerated the competitive environment, i.e., struggle for construction market share and working opportunity among LDC and developed countries. To convert and intervene the internal and external environmental competitive effect, SMLC has opted to find and employ a dynamic and alternative strategic process and decision during business execution to attain sustainable competitiveness that will hold to maximize the profit and hence growth [3].

The introduction of Structural Adjustment Programmes (SAP) to LDC around the 1980s to 1990s instituted reducing

or cutting off governments’ investment funds. The effects led to a prolonged severe, and persistently shortage of Public funds [4]. Notwithstanding substantial investment in various construction infrastructures [5], the situation caused insufficient gross domestic saving for decades, resulting in an extended shortage of financial resources that could fund many public construction projects executed by many SMC [6]. This led to government withdrawal from direct provision of construction services and rendered to the private sector. Ultimately, the change in SAP’s policy forced LDC to occupy a high-interest rate loan from industrialized economy countries under IMF and World Bank. The increase of interest rate witnessed by LDC had a catastrophic effect to the construction industry that led to the fell backward of many construction firms.

Nevertheless, only firms that continued to survive faced a highly competitive construction environment from overseas companies [7]. The competitive climate obstructed the growth of the local firm in terms of capability and unsustainable Competitiveness. However, the ongoing global business market has manifested an intensive international competition. The competition has triggered the need for local construction firms in LDC to find preferential strategies to respond and abide to increase clients' and stakeholders' demands to survive within the domestic hyper-competitive market. Currently, diverse construction firms have tried to identify their competitive market features to attain the competitive environment measured in achieving quality service or product at a lower or reasonable cost and within good delivery time [8]. The BPR technique has been viewed as necessary to scan, innovate, improve, and reengineer the strategic core construction business processes for SMLC to efficiently and effectively service delivery to serve the clients and customers better to attain sustainable competitiveness against the overseas firm. The “to be” re-engineered processes involve planning and engineering design, procurement, construction production management, and organizational/administration. Thus, this study intends to fill this gap.

## 2. Literature Review

### 2.1. Overview of SME in Tanzania

After its independence in 1961, Tanzania recognized to adopt the socialism and self-reliance strategic path for its national development. The state path aimed to capture and control all means of production after the nationalization of the critical private businesses venture [9]. This strategic approach recognized the increase and growth of social-economic development services, including water delivery, health services, and education. Nevertheless, the process occupied a negative consequence, leading to poor economic results in terms of financial crises and imbalances for some decades. The undesirable effect which embraced the emerged financial crisis manifested the need for an immediate transitional strategic policy change from a governmentally owned and controlled economy to a free-market economy. Thus, numerous initiatives were undertaken towards establishing the financial restructuring. Initiatives include a review of tax structure, reforms of the public sector, and trade liberalization. The liberalization led to an economic shift from a state-sector-driven economy to market liberalization [10]. Economic transformation enhanced the private sector (small and medium enterprises) establishment constituting over 90% of the economies and significantly acting as the potential driving force and an engine for the country’s economic growth and creating millions of jobs.

The reviewed literature works have confirmed the absence of a universal definition of SME. The most denoted definition is grounded on repeatedly variables such as the number of employees, the capital invested, and annual income [11]. However, the recognized definition by various international organizations such as United Nations, European Union, World Trade Organization, and the World Bank varies with changes in the economy from one economic area to the other, as described in Table 1 below.

Table 1. SME Definitions Recognized by International Organizations.

Institution	Number of Employees		Turnover (EURO)			
	Micro	Small	Medium	Micro	Small	Medium
World Bank	1-9	<50	50-249	Maximum 15,000,000		
Asian Development Bank	No official definition, Apply, only definitions of individual national governments.					
African Development Bank	1-9	≤50	NIL	NIL		
EU	NIL	<50	50-249	<€2 Million	<€ 10 Million	<€ 50 Million
SADC & ECOWAS	0-9	10-49	50-249	NIL		
Developed Countries	0-9	10-49	50-249	≤€ 2Million	≤€ 10Million	≤€ 43Million

In Tanzania, SMEs are described regarding the sector, investment capital, and the number of employees. A small-micro enterprise incorporates 5 to 49 employees. It includes small shops, vendors, and merchants around the cities. A medium enterprise covers 50 to 99 comprising a production or manufacturing, an industrial firm, and an exporting company. However, the capital investment ranges from less than 5Tshs million to over 100Tshs million. To ensure

capacitating and exploiting of SMEs opportunities within a vibrant SME sector, Tanzania has initiated and instated the SMEs Policy aiming to empower multiple agencies and or Institutions such as Small Industries Development Organization. Moreover, it includes the Tanzania Trade Development Authority, Tanzania Bureau of Standards, Tanzania Private Sector Foundation, and other agencies established to support SMEs advancement [12]. Thus, in

partnering with other development partners, including the United Nations Development Programme, the World Bank, and others, the country has envisaged soft-loan and various entrepreneurship training the most possible and potential strategy to permit a sustainable growth of SMEs.

When distinctly described reflecting the whether a construction project or sector, their development or growth involves multiple stakeholders, different phases with several processes occupied by other inputs as resources aiming to attain successful and sustainable competitiveness as a great aim of any particular firms. However, the firm's success in achieving its objectives profoundly depends on leadership quality, financial, technical, firm class, and organizational techniques employed by the firm [13]. In Tanzania, SMLC is

classified into five groups (Table 2) and seven classes grounded on registration class limit, which describe the amount of the project's contract value limited to be tendered within a particular class range [14]. The class range depends and aims to designate the capabilities in terms of resources owned and controlled by the envisioned firm. Moreover, foreign firms are allowed to register only the two (I & II) higher classes within the first four discipline groups and only three classes within the specialist contractor group. However, in building construction, it is worth to note that, class five are restricted to four (4) story structure, class six are limited to three (3) story structure. In contrast, class seven is not allowed to build any story structure [15].

*Table 2. Classification of Contractor Enterprises in Tanzania.*

CLASS OF REGISTRATION	A Group of Contractor and Class Limit for Single Contract (Million TZS)				
	Civil Contractor	Building Contractor	Electrical Contractor	Mechanical Contractor	Specialist Contractor
ONE	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
TWO	8,000	5,000	3,000	3,000	800
THREE	4,000	3,000	1,500	1,500	300
FOUR	2,000	1,800	900	900	
FIVE	1100	900	450	450	
SIX	500	400	250	250	
SEVEN	200	200	150	150	

Sources: [15]

The general characteristics of SMLC as SME in most developing economies can be traced and grounded on their source of capital. Many SMLCs are believed to derive their start-up capital from the commercial bank since the loan is characterized by inequitable and discriminatory loan borrowing tight conditions and complicated regulations to access loans with a higher interest rate for the successful borrower. Because of socialism and close emotional motives such as love and faithfulness friendship, another SMLC opts free to acquire the capital from family and friends. In addition, Most SMLCs are described to operate within unstructured procedures, confronted with the erratic and inconsistent business strategic process with most oral communication rather than documentation. The situation has made resources allocation, market recognition, and expansion difficulties, which always maximize the probability of achieving the business endeavors and strengthening the firm operations. Moreover, the majority of SMLCs operate within rural and regional areas. The areas have inadequate infrastructure facilities such as insufficient and highly cost working premises, communication and transportation network facilities, serviced land warehouses, power problems with an inadequate supply, and unreliable and unrealistic costs [16].

Furthermore, SMLC is characterized by a lack of technical and competent staff, resources, management experts, and technology, which generally restrict their sustainable competitiveness. It was summarized by Sexton and Barrett [17] that SMLC is bounded and enclosed by four essential and unique characteristics, including inadequate financial resources, management skills, information sharing problems, and competent operatives. Consequently, it is recommended that, in

LDC's competitive market environment, SMLC, full of feeble and unproductive characteristics, needs to remain to strive to find a substitute technique against overseas firms for sustainable competitiveness.

Despite the presence of partnering and or joint-venture with overseas firms, SMLC in Tanzania has been recognized to facilitate the creation and provision of working opportunities, helping citizens to mobilize the investment capitals, to generate income for family subsistence, providing the income distribution to a majority that has significantly contributed to reducing poverty and hence led Tanzania to become a middle-income country by July 2020. Similarly, SMLC has played an essential social-economical role through directly influencing and stimulating every day's lives of most Tanzanian and participants to boost the development of the physical infrastructure involving the constructed commercial and residential building, transportation, and communication systems such as roads, highways, airports, shipment, electricity projects such as a 2115MW Rufiji Hydropower projects (one of Africa's largest hydropower dam) and an 1800km Standard Gauge Railway (SGR) linking Tanzania to neighboring counties. Thus, despite its significant importance, SMLC in Tanzania has attained a low level of growth for decades due to a prolonged poor delivery, which has led to unsustainable Competitiveness against an overseas firm in the domestic market. Thus, despite the increased number of registered firms, the rise in investment capital, as well as the rise in CI contribution to LDC GDP's, the market share of SMLC for both consultants and contractors in LDC's domestic market has remained very low [18]. Thus, it has resulted in a continual dependency of the LDC construction

industry market on foreign firms which are sustainably competitive in the domestic and international market.

Numerous challenges have been noted to hinder SMLC's Competitiveness in LDCs. These include inadequate resources such as lack or shortage of technical and competent labor and finance or capital [19]. In addition, construction contract and claim problems, poor planning and management of formulated policy and strategy, low Gross Domestic Product (GDP), which reflects economic hardship and high

level of poverty [20], poor historical performance, lack of advanced technology that improves product performance and poor government policy and support [21]. However, more challenges have been mentioned as Table 3 below provided a summarized holistic challenge facing SMLC in LD. The effects of the challenges have resulted in low performance, and unsustainable Competitiveness of SMLC measured in terms of cost of projects incurred (over budget), project's time extension without attaining value for money.

Table 3. A Summary of Challenges facing SMLC in Developing countries.

Country	Challenges										Authors
	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	
Tanzania	+	+	+	+	+	+	+	+	+	+	(Tesha, D. N. et al., 2017; Kavishe, N. et al., 2019)
Uganda	+		+	+	+	+	+	+	+	+	(Ocen. S. J. et al., 2011; Basheka, B. C. et al., 2012)
Kenya	+		+	+		+		+	+	+	(Kenyatta, 2016; Momade, 2020)
Zambia	+	+	+	+	+	+	+	+	+	+	(Chilongo Sylvia, C. and Mbetwa, S., 2017)
Malawi	+	+	+	+	+	+	+	+	+	+	(Bentall, P. et al., 2020)
Nigeria	+		+	+	+	+	+	+	+	+	(Omopariola, D. E. et al., 2019; Akarowhe, 2018)
Mozambique	+	+	+	+	+	+	+	+	+	+	(Nhabinde, V. et al., 2012; Cruz, A. S. et al., 2018)
Botswana	+	+	+	+	+	+	+	+	+	+	(Ssegawa, 2013)
Ghana	+		+			+		+	+	+	(Ardonceanu, 2018; Marteye, N. T. et al., 2018)
Swaziland	+		+	+	+	+		+	+	+	(Thwala, 2009)
South Africa	+	+		+		+	+		+	+	(Murray, M. and Apphia-Baiden, J., 2020)
Zimbabwe	+	+	+	+	+	+	+	+	+	+	(Thabani, N. and Wellington, G. B., 2017)

NOTE: C1-Finance/Capital; C2- Contractual challenges; C3-Shortage of local Skilled labor; C4-Lack of feasible government policies; C5-Lack of business experience; C6-Lack of modern technology; C7-Ineffective Competitiveness strategies; C8-Environmental Challenges; C9-Ethical and code of conduct (Malpractices); C10-Lack of training.

Various measures have been undertaken to increase the enterprise's market shares and uplift its competitive advantages. Measures include; establishment of agencies and institutions such as Tanzania Roads Agency (Tan Roads), National Housing Corporation (NHC), Contractors, Engineers, Architects and Quantity Surveyors Registration Boards (CRB, ERB, and AQRB), formulation of SME policies, encouraging partnership and joint venture on construction projects, capacitating and strengthening construction sector related institution, the establishment of Public Procurement Act (PPA) and its regulation [22]. Moreover, it includes the establishment of CI policies of 2003, provision of various construction business training, reducing bureaucracy during registration, the establishment of Contractors Assistance Fund (CAF), adoption of short and long term plan together with the formation of ministries in government directly responsible with construction activities [23]. Despite the imposed efforts and measures, there still exist challenges facing SMLF that hinder sustainable competitiveness. However, the question remains, what are business re-engineering strategies for SMLC to attain sustainable competitiveness against overseas firms in the local construction market?

**2.2. Business Process Re-engineering (BPR)**

The effect of globalization, which led to a free market and increased business competition beyond borders, has compelled many construction firms to find an innovative system. The system has been considered as a solution approach to improve productivity and profits. It intended to reduce operating costs persistently increasing from one project to another, quality

improvement in better service against complex and dynamic customer demands in domestic communities [24]. BPR has been adopted in this study to assist in identifying various strategic construction resources as inputs and processes as a competitive advantage to attain the drastic performance change of the firm. BPR allow construction firm to create value through potential processes, identify tangible resources, and value activities that can help firms circumvent the outdated traditions of doing business and adjust to adopt changes in their construction environment.

Most construction firms fail to understand, determine properly, or establish the correct, reasonable, and practical construction processes that lead to ineffective management failure to understand the way forward to attain sustainable competitiveness. It results in a redundancy business operation that led to wastage of resources, time, cost with poor end quality. In their study, Cheng and Tsai identified BPR as a philosophy that can be applied to develop a new rational construction management process to improve operational efficiency and increase the competitive ability of a construction firm. During the management of organizational change, Thyagarajan & Khatibi recognized BPR to add a strategic value through the provision of new strategic vision, the building of operational capabilities, re-evaluation of new strategic options, and redefining the new products/services to reflect the firm's overall strategy [25]. Thus, BPR is strategically significant as it provides new hope and future direction for construction firms. Hammer and Champy defined Business process Re-engineering (BPR) as "the fundamental rethinking and radical redesign of business process to achieve dramatic improvement in contemporary

critical measures of performance, such as cost, quality, service, and speed” [26]. Davenport and Short defined the term process as a set of logically interrelated tasks executed to attain some defined results [27].

A business process was described by [28] as a crowd of related tasks that create value. However, as coined by Shodhgang, 2008, BPR is a technique that involves restructuring, redesigning, and reengineering of the processes aiming to maximize an organization's potentials. It therefore assesses and creates an amendment of strategy, process, technology, organization, and culture of business within an organization [29], which leads to sustainable competitiveness. BPR is among the most popular strategic management techniques that have attracted much attention from business, manufacturers, and practitioners to bring tremendous organizational change. Thus, it is a tool or an approach adopted to transform through re-design and re-shape to reduce the old and inefficient processes that can't deliver better business process results. BPR intends to reduce the operational cost; it aims to convert from sequential to simultaneous or parallel processes that rationalize the decision processes, accelerating increasingly sustainable competitiveness. Therefore, BPR uses resources to explore, adjust, and readjust the firm's activities, whether process or services that minimize delays, eliminate errors, reduce cost adaptable to the changing needs, and provide the firms with a competitive advantage.

BPR is a valued tool that has been applied as a substantial

driver toward a dynamic change within many organizations. It was introduced to facilitate re-inventing the traditional system and practice of doing work. The term BPR was broken down into two components. “The letter B in BPR described the boundaries of a process that define a business value; the P in BPR defines “a primary focus on important processes that deliver outcomes in the signature of all variants of BPR rather than focus on static organizational structures [30]”. BPR contributes significantly in changing the firms' process and behavior to become competitive, improve the capacity and capability, and satisfy customers, employees, and other stakeholders who wish for dramatic results that may help a firm survive in the long term [31]. Equally important, a Successful adoption/adaption of BPR has resulted in perceptible competitive benefits of firms through customer satisfaction, reducing cost, increased productivity, superior flexibility, and improved coordination. Generally, BPR incorporates a radical redesign that focuses on strategic processes that aim to attain a large firm's sustainable Competitiveness in reducing cost, timely delivery, and quality of service. BPR integrates the new strategic processes, re-design, and implementation of the changes in all its complex technological, human, and organizational diminutions” [32]. BPR has been used to describe what, how, and the results to be attained as a dramatic change. Table 4 provides a manifested chronological re-engineering definition, its principles, and the expected outcomes collected from various literature.

*Table 4. A Chronological Order of Re-engineering Definition.*

Authors	What	How	Expected outcomes
(Davenport and short, 1990)	Business Process, IT, Strategy organization	Analysis and design	Business improvement
(Manganelli and Klein, 1994)	Strategy evaluated business process System, policy, and benchmarking	Quick and radical redesign	Optimization of production workflows
(Ryan, 1994)	Market, clients, products, services, suppliers, and benchmarking	Fundamental changes	Business improvement
(Teng et al. 1994)	Ongoing workflow	Critical analysis and radical redesign	Significant improvement of efficacy
(Elzinga et al. 1995)	Systematic analysis of improvement, control, and management	Process analysis	Quality improvement of products and services
(De Toro and McCabe, 1997)	Functionally related work teams	Testing and modification methods	Business improvement
(Zairi, 1997)	Production, Marketing, Communication	Analysis and design	Continuous improvement of the main activities
(Hayes et al. 1998)	Experience and databases processes, echnical equipment, Technical infrastructure	Change of business approach, IT problem modelling	Fundamental changes in the way of business
(Sobotka, 2000)	System research models, Bottleneck research Optimizing concerning company's objectives	Simulation modelling and multi-variant solutions	Logistics improvement in the project planning stage
(Cheng and Tsai, 2003)	Processes defining, Selection, Operating analysis	Representation, transformation, evaluation, and process redesign	Business improvement
(Dukan et al. 2004)	Client satisfaction, Risk management, Quality insurance, Flexibility	IT implementation and radical organizational redesign	Significant business improvement
(Suman et al. 2009)	Organizational structure, Connected project team	Implementation of IT and mobile communication	Business improvement
(Kararic and Zavrski, 2012)	Organizational culture and design Company's Competitiveness	Outsourcing, TQM, benchmarking, virtual communication, learning organizations	Business improvement with constant monitoring

Source: Author; Extracted from Various Literature.

BPR has attained a low satisfactory level in CI due to its non-existence practically rather than in literature together with the uniqueness of the industry. Reasons mentioned for its nominal rate of adoption were non-

implemented of the majority of re-engineered initiatives that indicated the resistance to change together with the uniqueness of the industry [33]. In addition, other reasons for its non-implementation in CI include the absence of

systematic and collaborative processes that allow interface between varied process participants and lack of improvement efforts.

Thus, in this study, the BPR technique is adopted in helping SMLC in LDC to adapt, innovate, transform and remove unnecessary and remain with only core and value business processes as well as forming a flexible strategy and finding the government policies to efficiently serve the firms to attain sustainable competitiveness against overseas firms. Thus, from only three construction core and organizational processes identified above, only the core process will be successively designed to guarantee the best procedural value activities, maximize the control, increase operational efficiency to attain increased productivity, and improve sustainable performance competitiveness.

### 2.3. A Conceptual Framework of the Study

The framework of this study has adopted the business process re-engineering concept involving description and analysis of the re-engineering input attributes, including resources, processes, and policies to attain sustainable competitiveness as a dramatic change. The framework also indicates four strategic construction primary or core processes: design, procurement, construction production management, and organizational operations in attaining sustainable Competitiveness. However, a conceptual framework of the study (figure 1) provides the researcher's synthesis as referred to in previous literature in conjunction with the study philosophy to describe a phenomenon. The conceptual framework exposes the study variables (inputs and Processes) and the relationship between them to achieve sustainable competitiveness of SMLC of LDC.

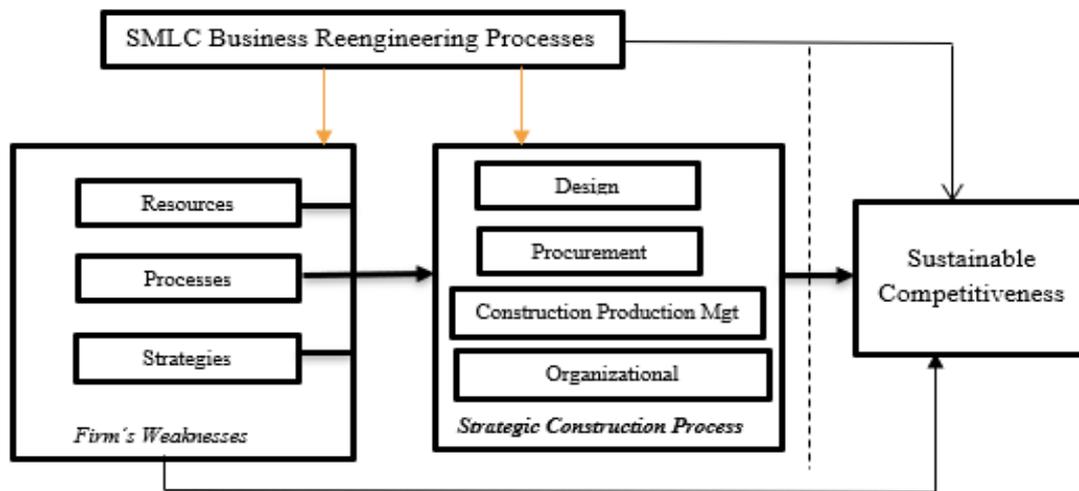


Figure 1. A Conceptual Framework of the Study.

### 2.4. Sustainable Competitiveness

Competitiveness is a continually worrying and debatable concept which have become open for many interpretations [34]. Therefore, the concepts can occupy different meanings regarding the particular context of literature used, whether firm, sector of economic activity of a specific region. The competitiveness concept has gained much interest to contractors and economists, politicians, industrialists, researchers, and academicians, reflecting developing and industrialized economy countries. The reviewed literature on the construction industry of LDC's Competitiveness has noted similar diagnoses for the prevailing challenges and the prescribed strategies for improving them. Thus, this paper aims to define the crystallized competitiveness strategies that rule the SMLC within LDCs. Flanagan justified the need for the study. et al. [35] that more research is required to help firms to formulate a competitive strategy. Thus, the published book titled "Competitive strategy" contributed expressively and rapidly the ever-increasing competitiveness concept [36]. Despite being a long-time concept to researchers in the

academic and business industry, its definitions have failed to attain a universal consensus [37]. This has made an independent struggle from researchers for its definition. However, the struggle considered the competitive environment while aiming to improve the understanding of the phenomenon. Thus, it is evidenced that there is no consensus on a definition of Competitiveness [38].

Competitiveness can be defined reflecting the firm context as the ability of the firm to produce and deliver the suitable goods and or services of the right quality and price within the reasonable time to efficiently and effectively meet stakeholders and customers' requirements [39]. The ability assists the firm in competing effectively against other competitors. In addition, Competitiveness was described by the World Economic Forum (WEF) as "The set of institutions, policies, and factors that determine the level of productivity of a country. The level of productivity, in turn, sets the sustainable level of prosperity that can be earned by an economy" [40]. Nonetheless, several relevant attributes (s) can be extracted from the definition(s) for a more and broader understanding of the concept representing economics such as profitability, productivity or market share; a continuous improvement [41], realizing

outcomes and objective, client satisfaction, innovation and value for shareholders as well as relative to competitors and allows the perception of potential. Thus, as ascribed, Competitiveness is a multi-defined, multi-measured, multi-layered, dependent, relative, and dynamic derived as a management idea reflecting the economic indicators such as profitability, market share, and productivity to improve performance and Competitiveness [42].

Sustainable competitiveness can be defined as the set of institutions, policies, and factors that make a firm or a nation productive over a more extended period of time while ensuring social and environmental sustainability [43]. The history of sustainable Competitiveness was extended from sustainable development to encompass to put more emphasis than does on the importance of productivity as a driver of prosperity and long-term growth. Various important factors have been mentioned the drive to sustainable Competitiveness of either individuals, firms, sectors, or a country. The factors mentioned include capitals in the perspectives of productive capital, human resource capital, social, institutional capital, cultural capital, infrastructural capital, and knowledge/creativity capital [44]. In addition, (Suzanne Rosselet, 2011) declared financial, institutional, legal framework, infrastructure, innovation, and technology to attain sustainable competitiveness.

Moreover, Garelli, S. revealed four factors, including economic resources, government policy and efficiency, business efficiency (productivity, labor, management practice), and infrastructure (education and training and technology) [45]. Generally, to ascertain sustainable competitiveness within an organization, resources, feasible processes, and government policy and support are fundamental factors.

### 2.5. Competitive Strategy Theory

Two theories on Competitiveness developed by Porter portrayed the potential strategic area of Competitiveness. While the first theory adopted five competitive forces, including Strength, Weaknesses, Opportunity, Threats (SWOT), and Value chain [46], the second theory reflects the Resource Base View (RBV) of the firm [47]. The first theory describes the unique performance of the firm in executing similar activities compared to counterpart firms in attaining sustainable competitiveness. [48] Argued that competitive advantage is a crucial fundamental determinant of the firm's performance, which arises from either a protected market position or a specific (intangible resources), including knowledge and skills, leadership and culture, and a dynamic capability that involves periodic innovation.

The second theory describes the RBV of the firm as a collection of different resources together with value processes. Processes involve core competence, knowledge, and capability in transforming resources into economic profit [49] hence attaining better performance and sustainable Competitiveness. It was noted that if resources are possessed and effectively utilized by the firm, it becomes a fundamental source of competitive advantage. However, the two concept theories complement each other intending to realize

competitive advantage [42]. From the above theory, it can be concluded that, only firm which can sustainably coordinate, controls, utilize more effectively and efficiently the available, valuable, rare, unique and non-substitutable resources, including all assets, competence and capabilities, value activities, firm attributes, information, knowledge can comprehensively implement the strategies compared to other competitor to attain a sustainable competitive advantage of the firm. Thus, this raises the need for identifying the resources as inputs and value process-related strategies as a substantial in achieving competitive advantage to SMLC to compete against the overseas.

A competitive strategy can be defined as a long-term plan to attain a competitive advantage for better performance and sustainable competitiveness against other competitors [50]. In achieving the competitive edge, Porter emphasized adopting the strategy, focus, differentiation, and low-cost leadership [51]. In construction, a differentiation strategy can be achieved through quality design that considers low construction costs to provide exceptional and valuable services to customers compared to other competitors. Focusing on cost reduction and control is the heart of cost-leadership strategy, making a firm attain profit and hence compete. Therefore, through experiences, different techniques should be applied to lower the cost while maintaining efficiencies. Techniques include reducing the operational, overhead, and R&D expenses [51], and economical construction methods to facilitate attaining a sustainable competitive advantage.

Different competitive strategies that enable the firm to achieve sustainable competitiveness have been mentioned in various studies. These include; core competence management and the participation of every individual at all levels in the firm. This helps obtain the critical information that can assist in evaluation, identifying performance and competitiveness gap; hence, formulate an alternative strategy to fill the gap. A study conducted by Henny, A., and Mohammed, F. acknowledged that knowledge, technical competence, human resource, and conceptual skills are the essential strategies for a firm's sustainable Competitiveness [52]. Wang & Yang proposed the strategic alliance as a fundamental strategy for firms to compete domestically or internationally [53].

Abd Ghani. et, al; recognized strategic planning and the international joint ventures as the essential elements and preferential strategies to be considered since they affect the daily operation of the firm [54]. The findings by Iyagba, R., & Ojuola, J. coined the management competence as the best strategy for the sustained persistence and growth of the firms [55]. However, high investment in fixed assets also positively impacts the firm's ability to compete with some projects [56].

Furthermore, strategies identified include financial stability and partnership, firm owner's characteristics, human resource development and management, resource development, quality practice standards, and best construction method [57]. In the same vein, the government policy and support have acted as a potential and a preferred competitive strategy and catalyst. It plays a fundamental role as a client, promoter, and regulator in

coordinating all undertakings towards successfully transforming a particular SMLC. However, Fajar (2017) have cemented the government support to facilitate creating a better

business working environment, certifying training, capacitating the institution, and enforcing policy and strategies for the SMLC Sustainable Competitiveness [58].

*Table 5. A Summarized Strategies for a Sustainable competitiveness.*

Construct	Item of Strategies	Authors
EDP1	Employ a competent and skilled design team	(Kleinsmann, M., 2006) (Uusitalo, P. et al; 2019) (Pikas, E. et al 2020) (Kunhui, Y. and Tekka, R, 2020)
EDP2	Develop a Design Process Management Protocol	
EDP3	Allocate a balanced design resource	
EDP4	Integrate design team with related department	
EDP5	Adopt conceptualization of design and design management	
EDP6	Gather complete client requirement information and flow	
EDP7	Adopt Constructability to avoid reworks/design changes	
EDP8	Abide to design standard and specification	
PRP1	Review the conflicting Procurement Policy & regulations	(Akintoye. A et al., 2003) (Storr, 2004) (Kunhui, Y. and Tekka, R, 2020) (Lu, W., et al, 2009)
PRP2	Abide by procurement control, low bidding, assurance, and Integrity	
PRP3	Adopt an electronic-tendering system to reduce a bidding cycle	
PRP4	Adopt electronic-procurement for Transparency	
PRP5	Adopt the partnership bidding strategy	
CMP1	Adoption IT and Building Information Modelling (BIM)	(Shifidi, 2012) (Sadler-Smith, 2004) (Arditi, D.& Gutierrez; 2005) (Jauch, H. & I. Sakaria, 2009) (Kunhui, Y. and Tekka, R, 2020) (Carr, A. and Pearson. N, 2002) (Momaya, K. & Selby, K, 1994)
CMP2	Employ a Skilled and Competent human resource	
CMP3	Ensure availability, allocation, utilization & management of resources	
CMP4	Adopt the joint venture with a capable foreign firm	
CMP5	Enhancing innovative Supply Chain,	
CMP6	Quality Management (Standard and Specification)	
CMP7	Contract and Design Management	
CMP8	Use of available quality local Materials	
OP1	Develop an effective organizational structure	(Weishang et., 2008) (Ho, A. T.& I, T, 2015) (Tabassi, A. et al, 2011) (Fei Deng et al., 2013) (Kunhui, Y. and Tekka, R, 2020) (Wang, G., & Yang, J, 2011) (Berman, L. et., al, 2002)
OP2	Capacitate human resources through training	
OP3	Maintain low operational cost of the firm	
OP4	Retain a better contract management team	
OP5	Ensure strategic planning, alliance and control	
OP6	Enforce the government policies during construction	
OP7	Adopt effective Bidding process strategy	

Note: ED=Engineering Design; PR=Procurement’s=Construction management; O=Organizational; P=Process.

### 3. Materials and Methods

#### 3.1. Survey Method

The study was conducted in Tanzania from December 2019 to June 2020. It adopted a questionnaire tool and an interview as a survey method to collect and assess a large population-based feature view on a small collected sample of respondents within the case study area representing LDCs. A total of (123) class one local firm [59] registered to Contactors Registration Boards (CRB) were identified. A good performance comprised good experience of more than ten years and the capability in terms of resources and experts as referred to their registration criteria. Since the study aimed to analyze the BPR strategies, only firms capable of undertaking and practicing, experienced, able to adopt, pay for undertaking the BPR training, and measure to analyze their performance to acquire sustainable competitiveness were considered. However, twenty (20) employees with more than ten years of experience were purposively selected from different firms for a pre-qualification interview of the systematic process. The pre-qualification of a systematic approach enabled the identification of thirty-one (31) firms with the BPR mentioned above capabilities with a total population of (519) conditioned to have a working

experience of more than ten years. However, Taro Yamane’s formula was applied in the equation below to compute the minimum sample size for the study resulted in (227) respondents.

$$\text{Sample Size } (n) = \frac{N}{(1+Ne^2)}=227$$

Where “n” is the minimum number of respondents required (minimum sample size), “N” is the study population size and “e” represent a level of precision, or an acceptable margin of error assumed at a 95% confidence level for this study [60]. Additionally, the study must test if the sample is adequate for Structural Equation Model (SEM) analysis. The online priori-sample size calculator for SEM <https://www.danielsoper.com/statcalc/calculator.aspx?id=89> ) was used in this study to find the minimum sample size. However, the anticipated effect size (Cohen's d) was 0.3. The desired statistical power level was 0.8, the number of latent variables of the study was 4, and the number of observed variables was 14 at the probability level of 0.05. It was found that 138 is the minimum recommended sample size for SEM. Thus, this indicates that the above-calculated sample size (227) was suitable for the study and SEM analysis.

### 3.2. Questionnaire Design

A structured questionnaire instrument divided into four parts was administered to registered respondents to obtain an opinion for the study. Part one aimed to obtain the respondent's demographic information. Part two is expected to get the views on the current dominant performance weaknesses of the firms. Part three intended to get information on the construction core and organizational process. Part four was focused on identifying the new potential process strategies under the business process re-engineering philosophy embraced from the core construction and organizational Process.

A five binary Likert scale number (from 1= Strongly Disagree/Not Important/Not Influential, to 5= strongly Agree/ Very Important/Very Influential) planned to indicate the numerical ranks only were used. Neither absolute quantities nor equality interval between them was intended. A continuous average rating with proposed ordinal values helped precisely to translate the opinion results of respondents. The formula: (Highest Point minus Lowest Point in the Likert scale) Divide by the number of the levels was adopted to compute the level of each item [61]. However, the following group Likert scale points (1 to  $\leq 1.8$  Represented Strongly Disagree); (1.81 to  $\leq 2.6$  represented Disagree; [2.61 to  $\leq 3.4$  described Moderate; (3.41 to  $\leq 4.2$  represented Agree) and (4.21 $\leq 5$  expressed Strongly Agree) were used.

Twenty senior and experienced experts from previously identified respondents were randomly selected and registered for a pilot study. It was intended to test and identify mistakes, blunders, and incorrect, unnecessarily wordy, and unambiguous terms in the questionnaire. The pilot study facilitated to identify and review to produce a clear and elaborative questionnaire that every respondent could simply understand during questionnaire administering. A total of two hundred twenty-seven (227) copies of questionnaires written in English and translated into the local Swahili language were distributed. However, ethical consideration factors for respondents were considered, such as voluntarily or willingness to participate in the study, respondents anonymously completed the questionnaire, convenience for availability, accessibility to participate in the study. The researcher provided a brief clarification of the questionnaire during face-to-face interviews to ensure respondents understand the study objective. However, seventeen respondents who missed the face-to-face interview were communicated through their emails and social media networks such as WhatsApp, WeChat, and calls to fill in the questionnaire. One hundred eighty-nine (189) equivalent to (83.26%) appropriately administered questionnaires were used for data analysis.

### 3.3. Analysis Methods

The collected sample data were coded, edited, descriptively analyzed, and checking for construct validity and reliability analysis using SPSS 24 and AMOS statistical software.

Construct validity was performed to measure the extent to which all items on a scale measure the same construct. Data reliability was examined to test the internal reliability of the 5-point Likert scale. The examination intended to check if the questionnaire survey tool provides equivalent results at different sets of tests. Besides, SPSS was used to perform the confirmatory factor analysis (CFA), whose result facilitated a convergent and discriminant validity test. However, using SPSS-AMOS, a structural Equation Modelling (SEM) was used to develop the sustainable competitiveness model.

## 4. Results

### 4.1. Demographic Information

The study respondents engaged 9.7% diploma graduate 57.3%-degree graduate, 23.7%-master graduate, and 9.3% PhDs. In addition, 61.7% represented engineers, 23.1% architects, 11.4% QS, and 3.8% other experts. Furthermore, senior and experienced staff participated in the study. The respondents involved executive directors and general managers (23.1%), construction project managers (33.4%), section managers (26.2%), and Site foremen and supervisors (17.3%). However, the demographic characteristics of the respondents acknowledged the involvement of enough experts from SMLC who provided beneficial answers and constructive opinions as potential data for the study.

Table 6. Respondent's Demographic Information.

Item	Class	Frequency	Percentage (%)
Age (Years)	18-30	39	20.4
	31-43	93	49.3
	44-56	43	22.9
	Above 56	14	7.4
Working Experience (Years)	10-20	58	30.8
	21-30	97	51.3
	Above 30	34	17.9
Educational Level	Diploma	18	9.7
	Degree	108	57.3
	Masters	45	23.7
Professional	PhD	18	9.3
	engineer	116	61.7
	Architects	44	23.1
	Q. Surveyor	22	11.4
	Others	07	3.8
Leadership	Directors & GMs	44	23.1
	PMS	63	33.4
	Section managers	50	26.2
	Foremen/Supervisor	32	17.3

### 4.2. Competitiveness Weaknesses

For the re-engineering process to occur, it was essential to understand the competitiveness weakness from either of the six-group category within competitive domestic markets as demonstrated by respondents. The relative importance index (RII) with Likert scale was opted to show the relative effects of the weakness on sustainable Competitiveness as represented below in (Table 7). Relative Importance Index was computed about the formula: Relative Importance Index (RII) =  $\Sigma W/AN$  Where W defines the Likert scale weight (1-

5) given to each weakness by respondents, A is the Likert scale highest score weight (5), and N is the total number of respondents (189). However, the most top-ten weaknesses were considered for explanation.

Table 7. Competitiveness Weaknesses.

Weakness Category	Weaknesses Likert Scale Weight	Respondent's Frequency (N)					Total N	RII		Ranking
		5	4	3	2	1		ΣW	ΣW/AN	
Client Related	Lack of certified training	63	59	47	11	9	189	723	0.765	10
	Late payment of completed works	46	37	35	37	34	189	484	0.512	26
	Project interference	21	19	42	56	51	189	470	0.497	27
	Fail to abide to contract	68	53	24	20	24	189	688	0.728	14
Consultant Related	Late approval for payment	56	49	44	23	17	189	671	0.710	15
	Poor & late quality assurance/inspection	79	79	19	5	7	189	549	0.581	23
	Poor Infrastructure supervision	59	83	35	9	3	189	753	0.797	8
	Fail to advice the client for good decision	59	53	46	17	14	189	693	0.733	13
	Inadequate financial ability	89	79	21	0	0	189	824	0.872	2
Contractor Related	Poor resource management	93	79	17	0	0	189	832	0.880	1
	Lack of modern technology	68	62	51	8	0	189	757	0.801	7
	Inexperience	71	59	43	11	5	189	747	0.790	9
	Shortage qualified and skilled employee	81	67	36	3	2	189	789	0.835	5
	Use wrong construction method	48	39	48	27	27	189	621	0.657	17
Government-Related	Lack of government policy and support	83	88	7	2	9	189	801	0.848	3
	Lack of feasible competitive strategies	79	87	15	2	6	189	798	0.844	4
	Political Instability/interference	29	46	57	39	18	189	596	0.631	19
	Non considerate regulations & rules	19	47	59	39	25	189	563	0.596	21
	Poor or frequently design changes	52	69	41	14	13	189	700	0.741	12
Professional & Ethical Related	Predominantly Malpractices / Corruption	81	67	28	6	7	189	776	0.821	6
	Non-adherence to standard & specification	49	49	54	23	14	189	663	0.702	16
	Inconsistencies in contract documents	58	71	37	13	10	189	721	0.763	11
	Non-adherence to ergonomics principles	19	37	71	47	15	189	565	0.598	22
	Unforeseen conditions	19	47	83	28	12	189	600	0.635	18
Environmental Related	Frequently weather changes	43	41	39	29	37	189	591	0.625	20
	Conflicts/ Strike	23	37	38	30	61	189	498	0.527	24
	Failure on waste management	21	17	49	63	39	189	485	0.513	25

Poor resource management was given the top priority since adequacy and poor management of resources invariably leads to project time extension, increases cost and unsatisfactory quality, and becomes unprofitable, one of the potential factors of Competitiveness. Resources are one of the primary influential and competitive advantages for any firms' progression. Thus, SMLC is encouraged for resource management to attain sustainable competitiveness against overseas firms. Moreover, financial inability to SMLC was secondly ranked. Many firms agreed to face the economic calamities and challenges from the financial institutions. As per respondents, firms are confronting with unnecessary bureaucracy in accessing loans. Despite the bureaucracy, most financial institutions have imposed high-loan interest rates that mostly require a non-movable property as collateral for the loan.

Furthermore, the absence of feasible, practicable, and viable competitive strategies and realistic government policy and support to SMLC from LDC have failed firms to attain the ability to outperform their rivals. The government needs to establish and emphasize construction strategies and policies which will facilitate sustainable competitiveness. Inexperience among unskilled labor has simultaneously hindered sustainable competitiveness.

Most SMLC employs inexperienced, unskilled, and fresh graduate labor expecting to pay them little. It hinders the performance and hence Competitiveness. Not only was that, but also inadequate infrastructure supervision mentioned among the priority weakness to hinder Competitiveness as it leads to

project delay. In addition, another drawback includes a lack of certified training. Many SMLC has no on-job training culture. This has made most employees fail to strengthen their skills, hence failing to reduce the weak link among employees during work execution. Thus, it is advised to have a staff development program through on-job training to improve their performance to become competitive. In the same vein, most respondents cautioned the predominant malpractices, especially corruption behavior during tendering and construction. The attitude has caused awarding the work to unqualified, incompetent, and unskilled firms that eventually fail to compete within the market, leading to inadequate or incomplete construction projects.

#### 4.3. Characteristics of SMLC

Understanding the characteristics of SMLC is important and a key for a dramatic change to improve Competitiveness. The identification of the firm attribute intended for BPR was among the vital stage of the study. Using descriptive analysis, the average mean for characteristics was computed. Only those attained above the stated five Likert scales range (3.41-Agree or effective to 5-strongly agree/effective) were considered the potential characteristics for SMLC's sustainable Competitiveness. However, the findings realized eight (8) characteristics. Quality resource availability (M=4.51; SD=0.931) was first ranked to facilitate the SC of the firm. The best management practice (M=4.47; SD=0.913) and competent, skilled, and experienced employees (M=4.33;

SD=1.004) were noted to facilitate attaining a dramatic change to attain a SC. Other characteristics includes proper organization process (M=4.09; SD=0.825), proper information sharing (M=4.01; SD=0.775) and ethical practices (M=3.92; SD=0.827). However, realistic and visionary strategies for the firm (M=3.87; SD=0.867) were coined to facilitate benchmarking the key management facets and change the

market structures and the rules of competition. Nevertheless, adherence to professional ethics and code of conduct was last mentioned as a moral consideration which helps to treat the construction project's process equally with the same degree of honesty as stated in contract documents to attain a successful re-engineering process and hence a SC.

**Table 8.** The Characteristics of SMLC.

Code	SMLC Characteristics	Mean	Std. Deviation	Skewness	Kurtosis
A	Quality resource availability	4.51	0.931	0.254	0.266
B	Best management practice	4.47	0.913	0.406	0.543
C	Competent, skilled and experienced employees	4.33	1.004	0.401	-0.307
D	Proper organizational processes	4.09	0.825	0.528	0.547
E	Proper information & communication channel	4.01	0.775	0.377	-0.318
F	Ethical consideration	3.92	0.827	0.353	-0.720
G	Presence of realistic & visionary strategies	3.87	0.867	0.767	0.585
H	Adherence to professionalism	3.74	0.806	0.736	0.592

**4.4. Strategy Identification and Ranking**

From the literature, various construction core strategic processes together with organizational process strategies were identified. At first, SPSS-24 was used to compute Cronbach's alpha coefficient to assess and measure the reliability and internal consistency of four latent variables (items). The Cronbach's coefficient indicates the covariance between the pairs of objects. However, it can be seen from

Table 9 that the computed value was found to be within the acceptable value of 0.7 [62]. Secondly, Kaiser-Meyer-Olkin (KMO) measuring the Sample adequacy was computed using the Principle Component Analysis (PCA) method. The result analysis revealed the chi-square of approximately ( $\chi^2 = 2365.22$ ), (DF=861.7) and KMO (0.772) at (0.000) significant level. The result indicates a non-identity correlation matrix that suggests the samples' suitability or factor analysis [63].

**Table 9.** Cronbach's Alpha Coefficient.

Item	Construction Processes (Latent Variables)			
	Design	Procurement	Construction Prod.Mgt	Organizational
No. of Observed Variables	4	3	4	3
Cronbach's alpha coefficient	0.915	0.794	0.767	0.711

Furthermore, the descriptive analysis and a one-sample -t-test of strategies were computed to obtain the mean score. Using SPSS, a descending mean score, standard deviation, T-values and confidence interval (CI) of each strategy (Table 9) facilitated ranking of fourteen strategies (14) whose scores

were above the acceptable stated value of 3.41, implying important or effective and considered to facilitate an SC of SMLC. However, if two or more strategies fall within the same scale mean value, the one with a lower standard deviation was highly ranked.

**Table 10.** Ranking of Strategy.

Strategies	Mean	Std. Deviation	T-Values	95% Confidence		Skewness	Kurtosis
				Lower	Upper		
CMP3	4.22	1.24	33.928	3.973	4.4668	-0.43	-0.65
CMP2	3.99	1.33	30.011	3.726	4.253	-0.38	-0.57
CMP1	3.85	1.31	29.489	3.590	4.109	-0.33	-0.49
OP2	3.83	1.62	23.629	3.508	4.151	-0.55	-0.96
PRP3	3.81	1.41	26.982	3.529	4.090	-0.31	-0.51
OP1	3.75	1.65	22.760	3.423	4.076	-0.38	-1.17
EDP3	3.72	1.48	25.060	3.425	4.014	-0.34	-0.75
CMP4	3.69	1.30	28.509	3.436	3.950	-0.27	-0.52
EDP4	3.66	1.52	24.094	3.358	3.961	-0.23	-0.95
EDP1	3.60	1.46	24.601	3.309	3.890	-0.36	-0.90
PRP1	3.53	1.53	23.014	3.225	3.834	-0.04	-0.82
PRP2	3.50	1.40	25.067	3.223	3.777	-0.09	-0.74
EDP2	3.50	1.56	22.432	3.190	3.809	-0.26	-1.02
OP3	3.43	1.80	18.428	2.953	3.666	0.11	-1.35

The first three highly ranked strategies with mean, Std deviation, T-values, and CI (Table 10) represent the

construction management-related strategies. They include; ensuring effectively availability, allocation, proper utilization

& management of all resources during construction ensure availability and employment of skilled, Competent and experienced human resource together with adoption and use of IT and Building Information Modelling (BIM) which saves time and cost of delivering the quality performance which are competitive advantages to SMLC to attain a SC. Resources include skilled workforce, finance, technology, equipment, materials, environment, and fixed assets such as land, real estate, and leadership. However, the fixed assets can act as a resource to be used as collateral security of the firm when applying for a loan on financial institutions [64]. Another strategy mentioned is the adoption of the joint venture with a capable foreign firm. Working in collaboration with foreign firms was noted to facilitate sharing skills, expertise, resources, and technology to create a competitive advantage. Thus, it is proposed that the government enforce laws on a joint venture in some public projects to assist SMLC in learning different strategies adopted by experienced foreign firms that help in problem-solving.

An organizational process including training to capacitate employees were also prioritized in the list. A certified training was noted to enhance knowledge sharing to an employee. Training not only acts as recognition and rewards to an employee but also serves as a firm’s competitive advantage [65]. However, respondents witnessed most of the firm owners in LDC to possess only financial power rather than knowledge and skills. During a face-to-face interview with one of the firm owners, it was noted that “Money is everything, whenever owning money, nothing more is required.” He insisted that “a firm owner can do whatever possible to win the tender and engage an expert for project execution.” Thus, lack of knowledge and skills to firm owners and stakeholders has made unsustainable growth and in Competitiveness of SMLC. Training constitutes strategies, policies, procedures, lessons, and tools for higher productivity, better performance, and SC [66]. Therefore, on-job training, seminars, and workshops must be enforced by the government and conducted to share knowledge and skills. Other organizational strategies mentioned involves: developing an effective organization structure for the firm and maintaining low operational cost.

The adoption of an electronic-tendering system was mentioned to reduce the bidding cycle during construction. This helps contractors shorten the process to acquire the resources quickly and efficiently to facilitate a proper supply chain. As noted by Lu, W. et al., 2009, the bidding strategy significantly

impact the firm's Competitiveness [67]. Despite the Public Procurement Act (PPA, 2001), which emphasizes the lowest bidder to be awarded a contract, many SMLC has no proper bidding strategy during bidding and construction compared to foreign firms. However, SMLC needs to think strategically and develop a competitive bid with reasonable profit, which in turn can have the possibility of winning the tender. Therefore, firms need to strategize on bidding as influenced by different factors, including policy, firm goals, etc. Thus, it is proposed to SMLC to reduce unnecessary cost, resulting in high costs imposed during the bidding process.

The practical design strategy was also coined to facilitate a SC. They include: effective allocation of a balanced design resource, developing a Design Process Management Protocol (DPMP), employing a competent and skilled design team, and integrating the design team with another related department [68]. Engineering design engages several interactive, intellectual, and management skills or competencies such as teamwork, communications, decision-making, problem-solving, processing core professional field and general knowledge competencies bundles [69].

**4.5. Potential Sustainability Competitiveness Strategies**

To obtain the potential sustainability competitiveness strategies, the factor analysis technique was opted to assist in recognizing a comparatively small number of uncorrelated observed variables with correlated patterns of response. At first, principal component analysis was conducted to reduce the observed variables into a small correlated group of variables. The results yielded four groups with fourteen strategies whose factor loading owned the acceptable value and have met the requirement for a good model fit with KMO value of (0.715) and ( $\chi^2$ /degree of freedom = 732.805/299). However, the data were proved to be adequate for the factor analysis process. (Table 11) provides the factor analysis results with varimax rotation. The analysis delivered the cluster matrix with a pattern of fourteen potential uncorrelated strategies having the eigenvalues above the digit and total variance of approximate (74.59%). On top of that, the composite reliability and the average variance extracted (AVE) of each construct was computed with values found to be above the acceptable value of (0.7 and 0.5) respectively [70]. The findings of (Table 12) suggests the presence of a related discriminant validity between construct variables.

*Table 11. A Rotated Component Matrix of Potential Sustainability Competitive Strategies.*

Code	Strategies	Clusters				CR	AVE
		1	2	3	4		
EDP1	Employ a competent and skilled design team	0.921					
EDP2	Develop a Design Process Management Protocol	0.859				0.813	0.931
EDP3	Allocate a balanced design resource	0.894					
EDP4	Integrate design team with related department	0.818					
PRP1	Review the conflicting Procurement Policy & regulations		0.871				
PRP2	Abide to procurement control, low bidding, assurance and Integrity		0.693			0.893	0.799
PRP3	Adopt an electronic-tendering system to reduce a bidding cycle		0.901				
CMP1	Adoption IT and Building Information Modelling (BIM)			0.736			

Code	Strategies	Clusters				CR	AVE
		1	2	3	4		
CMP2	Employ a Skilled and Competent human resource			0.941			
CMP3	Ensure availability, allocation, utilization & mgt of resources			0.905		0.971	0.866
CMP4	Adopt the joint venture with capable foreign firm			0.993			
OP1	Develop an effective organization structure				0.597		
OP2	Capacitate human resource through training				0.867	0.957	0.852
OP3	Maintain low operational cost of the firm				0.887		
	NOTE: 1. Extraction Method: PCA						
	2. Rotation Method: Varimax rotation						
	3. Initial Eigen Values	4.141	2.206	1.757	1.593		
	4. Percentage of Variance (%)	31.851	16.967	13.512	12.256		
	5. Cumulative percentage of initial Eigenvalues	31.851	48.818	62.329	74.586		

However, as commented by Hair. J. et. al, the square root of the AVE diagonal (Table 11) of the latent variables indicates the highest value in any column. The findings identified the presence of discriminant validity of the data that provides a strength to allocate each item on the specified latent construct.

Table 12. Discriminant Validity.

	EDP	PRP	CMP	OP
EDP	0.912			
PRP	0.733	0.889		
CMP	0.681	0.675	0.853	
OP	0.781	0.597	0.743	0.817

EDP=Engineering Design; PR=Procurement; CM=Construction Management; O=Organizational=Process.

The Pearson correlation coefficient at a confidence level (CL=95%) was conducted to compute the correlation between the potential identified strategies. The findings (Table 14) have

presented the statistically positive correlation at a significant value of (p<0.01 and p<0.05) in attaining a SC.

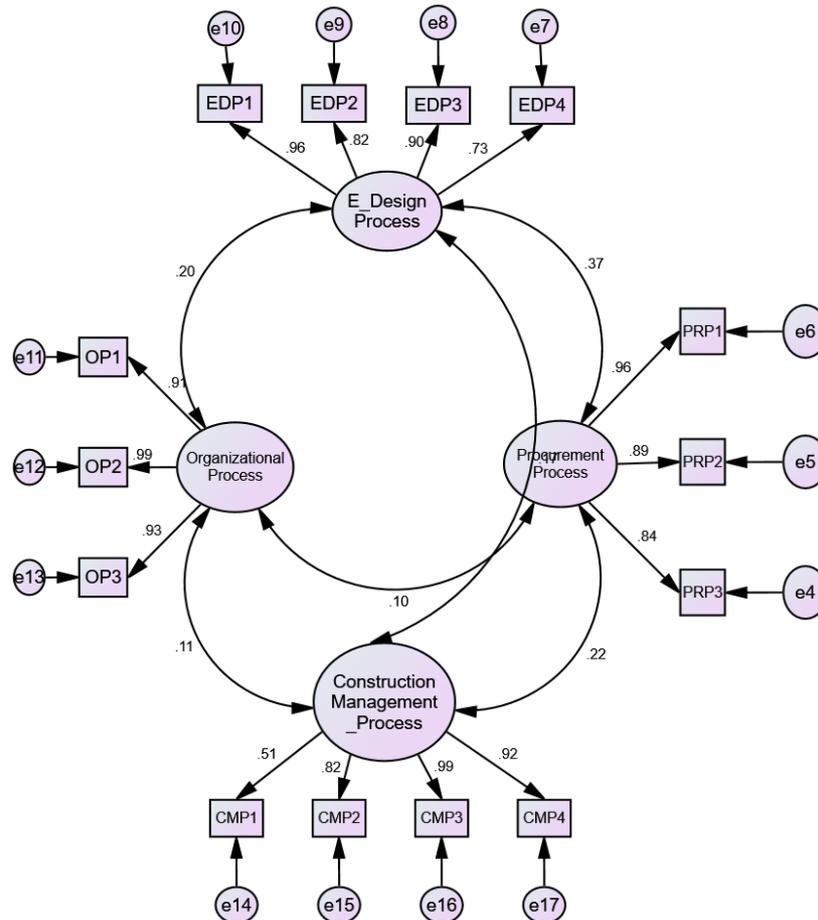


Figure 2. The Path Diagram Relationship between Variables; Source: (Researchers).

**4.6. Structural Equation Modelling**

The structural equation modeling (SEM) technique was chosen to test the theories or model between a construct's relative observed and latent variables. The structural model was built based on literature and correlation as defined in the study's conceptual framework. Always SEM supports to identify the scope to which the collected sample data support the theoretical model. During data manipulation and processing using SPSS-AMOS 24, all variables in a construct were drawn and retrieved for processing. After naming as defined within the data set file, the path coefficient for correlation and regression of a latent variable to an observed variable was drawn. Errors associated with observed variables were established, followed by determining the correlation covariance between latent variables. The path diagram (Figure 2) was drawn to indicate the positive relationships between each latent variable.

Furthermore, the structural model framework (Figure 3) has been presented to indicate the standardized estimates values between latent variables in attaining sustainable

competitiveness. The model result has provided the model fit statistics indices with ( $\chi^2$  /degree of freedom = 314.1/120 = 2.62 within acceptable threshold of <3); Room mean square error of approximation (RMSE) =0.049 (acceptable threshold <0.08); [Adjusted Goodness Fit of Index (AGFI) = 0.939 and Comparative fit index (CFI) =0.927 both with acceptable threshold value >0.9]; and Normed Fit Index (NFI) = 0.949 (threshold value >0.9). The Structural model framework has signified the significant positive relationships between variables. It is observed from the framework that there is a good relationship between strategic process variables in contributing to attaining sustainable competitiveness of SMLC.

However, the findings (Table 13) have indicated four predictors that had attained a reasonably and explained a significant relationship between defined variables. Thus, the findings imply that all four constructs of the identified strategies (engineering design, procurement, construction management, and organizational processes) have been found to possess a positive statistically significant contribution in achieving a sustainable competitive advantage intension to SMLC in LDC.

*Table 13. Unstandardized Regression Weight.*

Decision	Path	Coefficients				T-Value	Sig.
		Strategic Model Process	Unstandardized Coefficients		Standardized Coefficients		
			B	Std. Error (SE)	Beta		
Intension	<---	E. Design	0.228	0.060	0.353	13.794	0.000
Intension	<---	Procurement	0.091	0.085	0.096	11.067	0.003
Intension	<---	Construction Management	0.264	0.082	0.289	13.243	0.002
Intension	<---	Organizational	0.068	0.075	0.079	11.914	0.004

Thus, Sustainable Competitiveness (SC) Model= ( $\beta_0 + \beta_1$ EDesign +  $\beta_2$ Procurement+  $\beta_3$ Constuction.management +  $\beta_4$ Organizatioanal) Processes +  $\epsilon$ :

Where ( $\beta_1=0.228, p=0.000; \beta_2=0.091, p=0.003; \beta_3=0.264, p=0.002, \beta_4=0.068; p=0.004$ ) and  $\epsilon$ =an error.

*Table 14. Pearson Correlation between Strategic Processes.*

		EDP1	EDP2	EDP3	EDP4	PRP1	PRP2	PRP3	CMP1	CMP2	CMP3	CPMP4	OP1	OP2	OP3
EDP1	Pearson Correlation	1													
	Sig. (2-tailed)														
EDP2	Pearson Correlation	.787**	1												
	Sig. (2-tailed)	0.000													
EDP3	Pearson Correlation	.869**	.715**	1											
	Sig. (2-tailed)	0.000	0.000												
EDP4	Pearson Correlation	.683**	.695**	.634**	1										
	Sig. (2-tailed)	0.000	0.000	0.000											
PRP1	Pearson Correlation	.361**	.327**	.319**	.351**	1									
	Sig. (2-tailed)	0.000	0.001	0.001	0.000										
PRP2	Pearson Correlation	0.148*	.204*	0.251*	0.219*	.446**	1								
	Sig. (2-tailed)	0.001	0.004	0.003	0.001	0.000									
PRP3	Pearson Correlation	.302**	0.662**	0.179*	.210**	.826**	.402**	1							
	Sig. (2-tailed)	0.004	0.002	0.087	0.004	0.000	0.000								
CMP1	Pearson Correlation	.333**	.350**	.260**	.244*	.277**	0.247	.225*	1						
	Sig. (2-tailed)	0.001	0.000	0.005	0.014	0.005	0.014*	0.224*							
CMP2	Pearson Correlation	.221*	0.292*	0.231*	0.273*	0.480**	0.101	0.013	.633**	1					
	Sig. (2-tailed)	0.027	0.055	0.079	0.085	0.006	0.319	0.185	0.000						
CMP3	Pearson Correlation	0.227*	0.109	0.121	0.158	0.187	0.047	0.116	.506**	.814**	1				
	Sig. (2-tailed)	0.009	0.279	0.230	0.117	0.062	0.646	0.250	0.000	0.000					
CMP4	Pearson Correlation	0.128	0.078	0.041	0.066	0.084	0.087	0.021	0.102	0.122	0.134	1			
	Sig. (2-tailed)	0.206	0.441	0.685	0.514	0.404	0.389	0.838	0.310	0.227	0.183				
OP1	Pearson Correlation	0.088	.289**	0.157	0.159	0.004**	0.099	0.088	0.090	-0.015	-0.037	-0.068	1		
	Sig. (2-tailed)	0.384	0.004	0.119	0.113	0.961	0.328	0.384	0.371	0.882	0.715	0.502			

		EDP1	EDP2	EDP3	EDP4	PRP1	PRP2	PRP3	CMP1	CMP2	CMP3	CPMP4	OP1	OP2	OP3
OP2	Pearson Correlation	0.099	.250*	0.123	0.067	-0.032	0.087	-0.050	-0.089	0.046	0.024	0.016	.283**	1	
	Sig. (2-tailed)	0.328	0.012	0.224	0.511	0.748	0.389	0.624	0.381	0.649	0.815	0.871	0.004		
OP3	Pearson Correlation	0.075	0.189	0.112	0.054	-0.042	0.014	0.000	-0.105	-0.037	-0.013	-0.060	.368**	.691**	1
	Sig. (2-tailed)	0.461	0.059	0.265	0.005	0.679	0.889	0.997	0.299	0.717	0.900	0.552	0.000	0.000	

Note: \*\*. Correlation is significant at the 0.01 level (2-tailed); \*. Correlation is significant at the 0.05 level (2-tailed).

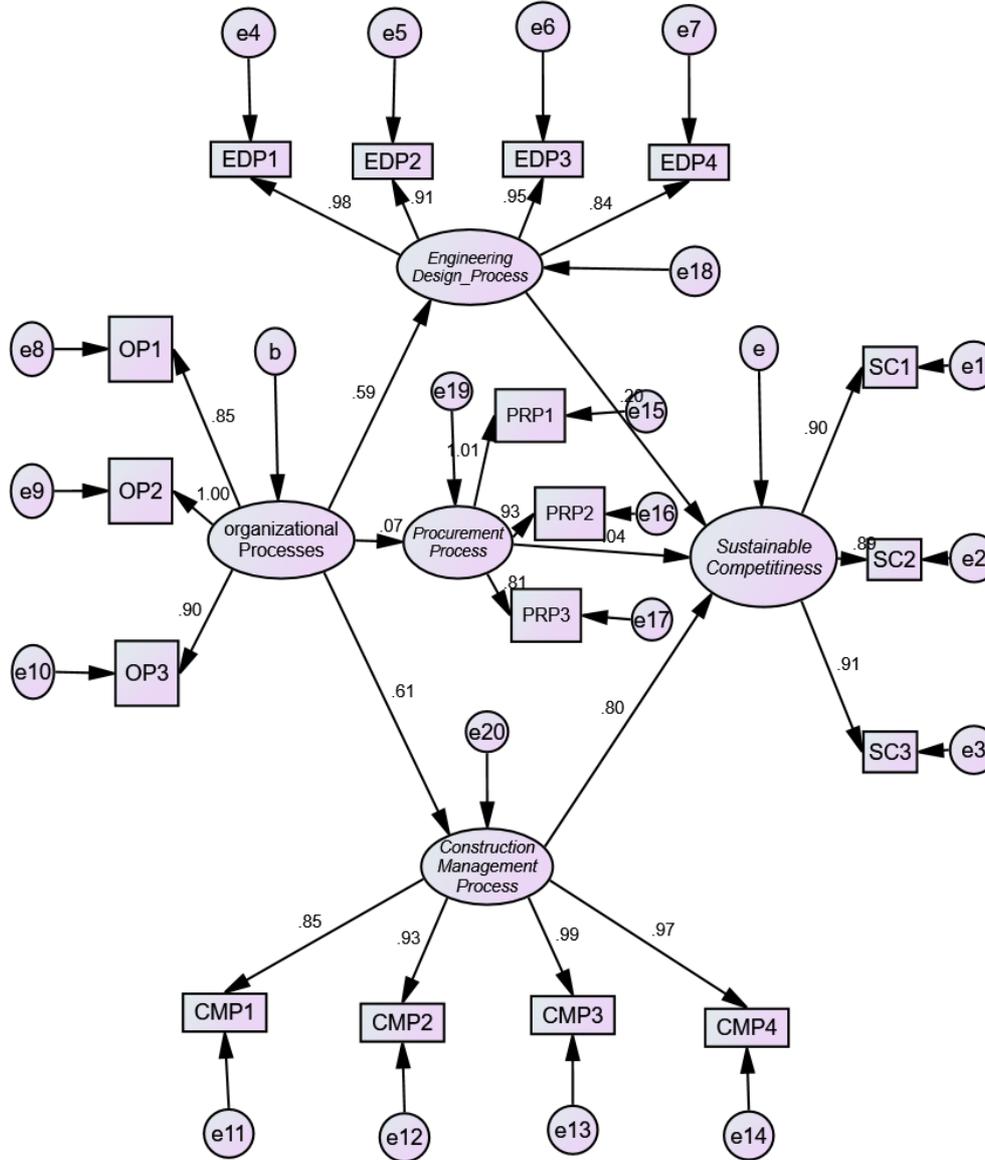


Figure 3. A Structural Model Framework of Standardized Estimates.

### 5. Discussions and Implication

This study aims to contribute to the body of knowledge on a business re-engineering process of small and medium local contractors. Specifically, the study scrutinizes diverse strategic construction processes that can envisage sustainable competitiveness within a domestic competitive market environment. As explained below, the study's empirical findings have acknowledged that the most forgotten (organizational processes) have shown a significant contribution similar to construction core processes

(engineering design, procurement, and construction management) in attaining sustainable competitiveness. The findings suggest that when strategic organizational processes are intermingled with core construction processes, it produces positively and a significant effect in achieving sustainable competitiveness, as explained below:

a) Engineering Design (ED) Processes

In any construction project, engineering design and construction production processes are separated and executed by separate and independent team parties, namely contractor and consultant, as designers working with different interests. However, sometimes the construction process can necessitate

simultaneous with the design process due to various changes to be accommodated. Thus, to attain a good ED, a strategic design is considered necessary. Competent and skilled design team, assigning enough design resources, mobilization of complete client and customer's needs, and working in collaboration with other related sections can always assist in reducing the design variation error (DVE), which suffered from a slid milestone, cost, and time overrun with less quality and low value for money as a substantial factor for a Sustainable Competitiveness. It was noted that the strategic design process needs careful consideration to avoid a design variation as a deviation from correct and acceptable practice. Muhammad et al., 2015 indicated that design error and design changes contribute to about 65% and 30%, respectively, of variation [71]. Therefore, it is distinguished that poor construction drawings, use of inexperienced and poor collaboration among designs experts, failing to accommodate scope changes done by clients, omission in designs, and lack of adequate design resources are the prominent factors for design-error-variation encumber a SC and compromises successful completion of construction projects. Thus, it is envisaged to incorporate the strategic design processes to attain a SC.

#### b) Procurement Process (PP)

Most SMLC under domestic competitive market have failed to win and acquire massive construction projects because of the imperfect procurement process (PP) such as bidding strategy. Most foreign firms are considered to possess more competitive advantages, including a better procurement strategic process of low bidding, which leads them to win most of the bids [72]. Therefore, SMLC should strategize on the bidding process by reducing unnecessary costs resulting in high bidding costs. Firms must bid at a reasonable price that considers a low-profit margin which can influence winning the bid. Thus, PP has been noted as a holistic and systemic approach to completing all construction projects phases. It has remained significant to SMLC from its best practice of focusing on the quality service and materials acquisition, supply and management procedures that hire an integrated method and technique to manage the processes, relationships, and consequences jointly with the suppliers [73]. Different PP intends to affect construction project performance that remains noteworthy to enhance successful project completion hence SC. Accordingly, various procurement strategic process that includes enforcing to abide by ethics and code of conduct such as procurement control, low bidding, assurance and integrity, adoption of an electronic-e-tendering system to reduce a bidding cycle and reviewing the conflicting procurement policies & regulations to avoid frequent conflicts and disputes among different actors, cost and schedule overruns in projects that can hamper attaining a SC. Thus, it is recommended to implement the strategic procurement process to achieve a SC of SMLC.

#### c) Construction Management Process (CMP)

CMP is an overall administration process encompassing planning, organizing, controlling, effective allocation,

utilization supervision of the overall construction project's resources to attain sustainable competitiveness in terms of reasonable operative time, minimum possible cost, and good quality with value for money (VFM). CMP entails ensuring the adoption of IT and BIM, employing competent and skilled human resources, ensuring effectively and efficiently allocation, utilization, and management of all construction project's resources such as finance, schedule, material, equipment, etc. since project's inception to completion, human resource management, provision of certified training to capacitate employees, financial capability as well as ensuring a joint venture with other foreign firms to ensure successful project delivery, hence a SC as explained hereunder: -

##### i. Certified Training to Capacitate Human resource

Provision of certified Training is one of the CM strategic processes since it enhances knowledge sharing to an employee on different aspects. Training not only acts as recognition and rewards to an employee but also serves as a firm's competitive advantage. Thus, lack of knowledge and skills to firm owners and stakeholders has made unsustainable competitiveness of SMLC. [74] Owed that, since training constitutes strategies, policies, procedures, lessons, and tools for employee's knowledge and skills acquisition can enhance good practice that produces a significant relationship with firm's quality productivity for a Sustainable Competitiveness. Moreover, an example of Chinese firms becoming competitive was supported by talented and skilled human resources who acquire competence and knowledge through different programs before being sent to international construction projects overseas [75]. Therefore, on-job training, seminars, and workshops must be enforced by SMLC and certified by the government.

##### ii. Effective Resources Utilization

Resources utilization is among the most CM strategic process towards attaining competitive advantages for SC. Resources include skilled workforce, finance, technology, equipment, materials, environment, and fixed assets such as land, real estate, and leadership. Other resources such as fixed assets can acts as collateral security for the firm when applying for a loan from financial institutions [64]. Thus, SMLC's resources should be thoroughly maintained, adequately allocated, and effectively utilized for a SC.

##### iii. Finance Capability and Partnership

Financial capabilities and partnership of and between SMLC are acknowledged to correlate in attaining the firm's sustainable competitive advantage directly. A study by Tabassi, A. et al., 2011 reinforced that financial ability is among the most preferential business strategies and the topmost ranking factor and an essential ingredient strategy of competitiveness. Thus, Seung H et al.(2010) emphasized the financial institutions, including banks and insurance agencies, to recapitalize the firms to attain competitive advantage for SC [76].

##### iv. Strategic alliance and Joint Venture

Strategic alliance and the joint venture were recommended

among the CM strategic process to enhance skills and knowledge. Working in collaboration with foreign firms has been proved to facilitate attaining skills, expertise, resource sharing, and technology transfer to create a competitive advantage. A joint venture involves a legally binding agreement (s) to share the combined resources, competencies, and capabilities to achieve a competitive advantage in the competitive market. The government should enforce laws on a joint venture in some public projects to assist SMLC in learning different strategies adopted by experienced foreign firms that help in problem-solving [77] and attain a SC.

#### d) Organizational Strategic Process (OSP)

Almost every firm or organization struggles to attain a good performance as a competitive advantage for a SC and development. Therefore, they are obliged to produce a dramatic improvement not only to compete and prosper but also to survive. Thus, construction firms are advised to reflect their strategic organizational (both functional and project) processes to remove the non-value strategic processes and remain with potential one. OP is a set of operations and practices that allow a consistent and resilient management process performance throughout the organization and provide the basis for cumulative, long-term benefits. Therefore, most organizational processes sometimes act as a construction management process that can be classified into planning, administration, and control process. In this study, strategic administrative functions such as developing an effective organization structure, capacitating the human resource through training, and maintaining the low operational cost of the firm were mentioned to facilitate a SC. Organizational Structure is defined as the recognized system that defines the line of organization of tasks and reports relationships that control, coordinate, and encourage and motivate workers to cooperate to achieve an intended organization's objectives. A well-defined organizational structure can enhance continuity, time, resources, and quality control in the functional disciplines to attain a SC [78]. Thus, OSP needs to be effectively realized for the sustainable competitiveness of SMLC.

## 6. Conclusion

Sustainable competitiveness (SC) is a critical challenge to most SMLC since it is affected by different problems and dynamics such as lack of resources, non-value processes, poor management skills, ineffective performance with low productivity, and lack of government strategies and policies. However, for many decades, challenges have demonstrated a less competitive atmosphere of SMLC in the domestic market. The little competitive environment has created a miserable, confusing, and even no operational engagement in any global or international construction projects. Thus, a construction firm's sustainable competitiveness (SC) is currently a hot topic in LDC since it is affected by many factors. Despite that, many studies on construction firm's competitiveness have mainly concentrated on construction

core processes (design, procurement, and construction management) strategies and leaving strategic organizational processes untouched. Scores of the findings have revealed fourteen (14) potential strategic processes from both (construction core and administrative) processes to have a significant positive effect on sustainable competitiveness. Thus, it can be concluded from the findings that the strategic organizational process also has a significant positive contribution to attain a SC. Therefore, to realize a drastic change as a business re-engineering process outcome, SMLC should invest in value strategic processes rather than resource strategies. Adopting re-engineering to itemize the potential organizational strategic process as value activities to enhance a sustainable competitiveness and guarantee the gratification of the client and other shareholders' needs is of utmost importance.

Moreover, it can be drawn from the study findings that the re-engineering process on construction business is necessary for SMLC to identify the value strategic process for attaining a performance drastic change and hence a SC. In addition, SMLC needs to adapt/adopt the building technology to easier both construction core and organizational processes. Conversely, the study also proposes a joint venture with foreign firms in construction projects to attain a competitive advantage. Thus, to the best of information, this finding may be one of the most comprehensive studies that provide the insight and initial evidence to advance the knowledge in the construction industry and contribute and implication for researchers and stakeholder's construction industry of LDC. The study has proved the importance of focusing on re-engineering processes, specifically organizational processes, to attain improved performance and a SC. Furthermore, CI policymakers should also play an essential role in communicating and promoting the organizational process-related strategies benefits to SMLC improved competitiveness. Information and training programs should provide a vibrant and clear message about the OSP and its significant effects.

## Study Limitations and Direction for Future Research

This study was limited to adopt the BPR to develop a model of strategic construction processes SMLC's sustainable competitiveness in LDC, taking Tanzania as a case study. Thus, the study findings cannot be generalized. Otherwise, it can only be considered significant to construction firms distinguishing similar characteristic environments with those of LDC. However, future research is recommended for modeling the effects of construction technology-related strategies in facilitating construction business re-engineering processes for SMLC.

## Data Availability

The data collected for this can be accessible only upon request.

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