

# DRIVERS AND CHALLENGES OF VERTICAL INTEGRATION IN THE TANZANIAN CONSTRUCTION INDUSTRY

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Vertical integration is originally from the manufacturing industry. It is considered as a diversification strategy adopted in the construction industry as means of solving some of the existing problems associated with construction industry such as supply chain problems, fragmented process and absence of integration to mention a few. Based on existing literature, there is paucity of studies in this area. therefore, to bridge the knowledge gap the aim of this study is to identify driving factors and challenges encountered in the application of vertical integration in the Tanzanian construction industry. A qualitative research approach was adopted through a case study method whereby a total of 15 semi-structured interviews were conducted. Data were analysed through content analysis. The findings showed that the top three driving factors were increase in competition, quality improvement and client satisfaction. Whereas, nature of contracts, high investment cost, decreased strategic flexibility and increased business risk were the most mentioned challenges. The results of this study will foster better understanding of the drivers and challenges encountered and suggest solutions to enhance the application of Vertical Integration in the Tanzanian Construction Industry.

Keywords: challenges; diversification; driving factors; Tanzania

## INTRODUCTION

Vertical Integration (VI) is a strategy where a company owns or controls other stages of the production chain. The client, consultant, contractor, manufactures and suppliers of materials are some of the key players in a construction production chain. When one player takes control of several of the production steps involved in construction that is what's called VI. It involves entrance into construction related markets such as preconstruction activities like production of construction materials, post construction activities such as operation of power plants or complimentary activities such as manufacturing of furniture.

VI originated from the manufacturing industry as a means of reducing per unit cost of products. It happened during the time of very great volatility, which was later named

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the second industrial revolution (Casson and Godley 2007). It started in the last quarter of the nineteenth century in the United States of America. According to Chandler (1977), It came in three phases, the period of market expansion, then necessary developments in transportation to permit mass markets to begin and lastly the phase which saw the integration between mass production and mass distribution among a few pioneer firms who could only sell in volume if they created a way in which they could distribute in volume. Companies would supply their own raw materials, process, then transport and distribute the products by themselves.

VI was later adopted by the construction industry as means of solving some of the problems associated with construction. The construction industry is associated with a couple of problems which can be summarized into three groups; the product development process, e.g., fragmented process, problems related to the stakeholders, e.g., absence of integration and the contracting process, e.g., supply chain problems Latham (1994) and Egan (1998). But, the adoption of BIM technologies has enhanced VI in the construction industry, particularly in the developed countries because it demands inter-professional collaborations in project delivery (Jia, *et al.*, 2017). In developing countries like Tanzania, construction industry has continued to grow gradually over the years because of the country's investments in building and infrastructure projects (Kikwasi and Escalante, 2018). This growth has influenced a dramatic increase in competition within the industry to a point where some firms have decided to undergo VI. However, VI is fairly a new concept in the Tanzanian Construction Industry as compared to other industries such as the manufacturing industry. Examples of companies that have seen great success through VI in other industries in Tanzania include Mohamed Enterprises Ltd (MELT) and Bakhresa group of companies (Absanto and Nnko, 2013).

Despite the adoption of VI in Tanzanian construction firms, there is barely any literature on VI, moreover, there is little experience and knowledge shared regarding the adoption of VI. Therefore, to bridge the knowledge gap the purpose of this study is to identify the driving factors and challenges encountered in the application of VI in the Tanzanian construction industry.

## LITERATURE REVIEW

VI is one of the diversification strategies (Al-Sayegh, 2010). This type of diversification within the construction industry involves divergence into markets that relate to construction such as material supply, buildings maintenance and/or interior designing. According to Dikmen and Birgonul (2003) the reasons for related diversification include controlling quality, quantity and price of suppliers. In a vertically integrated system, the roles of developer, supplier, designer and builder are all done by one organization. A classic example is the design and build system (Oyegoke *et al.*, 2010). VI strategy increases a company's involvement in the production chain within which it operates (Barney 2007). Basically, according to Eldamnhoury and Hanna (2020), vertically integrated firms bring in-house expertise to do the activities that were previously outsourced. One could simply say, vertically integrated companies extend boundaries of their operations by keeping them under one firm. VI could either be forward or backwards (Adeleke, *et al.*, 2019).

Forward integration happens when a company progresses towards the end user in the production chain (Adeleke, *et al.*, 2019). It is when a company involves itself in activities that succeed them in the production chain. For example, in construction when a contractor diversifies into real estate where they can sell buildings. Forward

integration allows a company to have more dominance on the demand side (Lin *et al.*, 2013). Conversely, backward VI happens when a firm involves itself with activities preceding it in the production chain. It is when a firm moves towards the input of the subject product or service (Adeleke, *et al.*, 2019). For instance, Thomas, (2010) explained that backwards integration involves diversification towards the start of the production chain like the sources of raw materials gaining more control over quality and proportions of such materials.

### **Driving Factors to Vertical Integration**

A driving factor is something that has the power to cause something else to happen. In other words, it's something that strongly influences people and makes them do something. Cook and Garver (2002) explained that VI can be motivated by the aspiration to tend to customer needs without going overboard with cost. As the construction industry grows, customers are becoming more and more demanding of better and uncommon designs of buildings and structures. VI eliminates the problem of double profiting which allows companies to maintain lower prices while meeting diverse customer needs.

Guan and Rehme (2011) mentioned intensified competition as another driving factor to VI. Increased competition comes with the growth of any industry and construction is not any different. In any industry with intense competition, one will need to provide services of a high quality while maintaining relatively lower prices to stand out, and VI can support that. Similarly, Al Sayegh (2010), stressed that, the desire to improve quality could also lead to VI. The issue of quality is very sensitive in the construction industry, Davis and Pitts (2004) argue that when a firm has the ability to manage input into the process can decrease defect rates and hence gain competitive advantage. When we talk about the concept of quality in construction it goes together with the concept of time, in the sense that if that product or service can be available on time.

On the other side Green, (2020) reported that clients desire to achieve better value for money, hence the drive towards VI. Likewise, variability in input and output markets is another driving factor to VI (Desai and Murkheji 2001). Examples of construction inputs are building materials, time and money. Sometimes there's a massive volume of building materials in the market with no construction projects around, which forces the price of building materials to go down. Other times there is too many projects but not enough building materials, this gives the supplying firms leverage over the contractor and can choose to sell building materials at a very high price. A seminal study by Nayyar (1993) highlighted that this variation within the construction industry could drive a firm to vertically integrate as it realizes a market that is yet to be utilized by their counter parts. With VI firms can utilize this market for lower costs to gain quick profits through synergy creation. This also gives a firm total control on production because the firm is aware of the number of projects they have and can estimate the volume of inputs needed and make sure it is available when needed.

Attractiveness of the market can motivate a firm to vertically integrate (Al-Sayegh 2010). Market attractiveness include the extent to which a market offers opportunities to firms, considering the profitability, market size, growth rate and the level of competition. Whether a firm should or should not integrate and to what extent, it is all dictated by the attractiveness of the market in which that firm operates in. The best time to integrate is when the industry is in the growth phase and getting profits is relatively easy. Intangible resources, unique resources and core competence could

make a firm want to vertically integrate (Khalil, 2010). It is well known that branding and reputation that precedes the company are vital in building a business. When a company has these, it can be motivated to vertically integrate because of its good image/brand. Example, Persimmon, one of the UK's largest house builders, chose to vertically integrate parts of its supply chain, including tiles, bricks and timber frames and it managed to achieve leading margins of around 27% (Collinson Grant, 2023).

Additionally, a firm can be encouraged to integrate when there are idle tangible resources such as capital, machinery, or labor. Al Sayegh (2010) supports that, surplus of tangible resources is a motivation to vertical integration.

### **Challenges of Vertical Integration Strategy**

Like any other strategy, vertical integration is associated with few challenges considering that the firm is doing more work. Difficulties and complexities in coordinating activities was identified as a challenge by Al Sayegh, (2010). Coordinating the activities of one line of business on its own can be difficult, adding other lines of business just goes on to add on that. The firm might need extra or completely new set of human resource with additional skill sets to help with the coordination otherwise it could result to poor production due to poor coordination.

Another challenge is the need for high costs/investments (Desai, Mukherji 2001). Any business cost money, so when a firm chooses to either extend its operations or buy a new business, they will need extra capital to buy the new business and keep it running or to reinvest in the new technologies to avoid obsolescence and stay competitive. Additionally, vertical integration can include the problem of unclear scopes and design changes that is associated with design and build procurement system Oyegoke *et al.*, (2010). On the other side it is said that difference in economic and technological circumstances that exist in the various stages of a value chain, requires distinct management styles and cultures. Trying to manage the challenges that exist across successive businesses can be difficult to the management (Osegowitsch and Madhok, 2003). Vertical integration reduces flexibility by forcing the firm to follow trends in the segments they integrated. If technology or market changes making the production methods or products of one line of business outdated, the firm may find it difficult to respond quickly. Therefore, increase in business risk (Khalil, 2010) is another reported challenge in vertical integration.

### **METHOD**

A qualitative approach was adopted in this study because there is limited studies and knowledge of vertical integration in the construction context, therefore this study is exploratory in nature to facilitate the discovery of information in this area/topic (Amaratunga *et al.*, 2002). Similarly, Yin (2016) supports that qualitative approach is suitable for new and emergent topics. Through a case study research design data was collected using Semi-structured interviews because the semi-structured interviews allow the flexibility to explore questions into areas which could provide new perspectives of issues not previously perceived (Axinn and Pearce, 2006). A total of 15 interviews were undertaken with respondents from 3 case companies in Tanzania. The sample size is considered sufficient, because the range between 5-50 interviews is enough to attaining saturation (Patton, 2002). The interview transcripts were analysed using the summative content analysis method because it is an unobtrusive and nonreactive way to study an aspect of interest and it can give basic insights of how words are used (Hsieh and Shannon, 2005). Additionally, summative content analysis

enumerates the contextual use of phrases or words in the collected data (Squires *et al.*, 2022).

A two-stage sampling technique was used whereby the first sampling stage involved the selection of case studies through snowball sampling. This sampling technique was considered appropriate because vertical integration is not common in Tanzania, only a few firms are vertically integrated. The second stage involved the selection of respondents within the case studies, whereby purposive sampling was used. This was because of the nature of research subject and research questions. The case study selection criteria included: the firm must be a construction related firm and must be vertically integrated. Whereas the selection criteria of respondents from the cases included only members involved in decision making within the firm. The selected firms were identified as information rich cases. Likewise, Yin (2018) emphasized on using two or multiple cases as it is more substantial compared to when you use one case also it allows for examination of how a phenomenon behaves in different settings.

## **FINDINGS**

A total of three case studies were selected including Group Six International Limited, Dar es Salaam Glass Works and Advent Construction Limited. Based on the criteria explained above. The interviews revealed that Group Six International (Case 1) dealing with supply of construction equipment, building materials, real estate development, maintenance, and technical consulting among other things, has been vertically integrated both ways, forward and backward for around 7 years. Dar es Salaam Glass works Limited (Case 2) is also integrated both ways for over 20 years into supply of materials, real estate, logistics and transportation of materials and machinery, to mention a few. For the third Case findings revealed that Advent Construction Limited (Case 3) is only integrated backwards mainly into supply of ready mixed concrete and construction blocks for almost ten years. Below is Table 1 showing the profile of case studies.

*Table 1: Profile of Case Studies*

Case	Type of vertical Integration	Experience
Case 1	Forward and backwards	7 years
Case 2	Forward and backwards	20 years
Case 3	Backwards	10 years

Table 2 below illustrate the profile of interviewees. A total of 15 respondents were purposely selected and interviewed from the three case studies. Generally, 8 out of 15 people who were interviewed, had more than 10 years of working experience in the construction industry. Furthermore, examination of Table 2 indicates that 5 out of 15 had the top-level position within their organization and the majority were in the decision/managerial position in different departments hence a justification that information was solicited from reliable and well experienced personnel.

### **Driving factors for vertical integration**

In order to identify the driving factors of vertical integration in Tanzania, interviewees were asked, “what were the driving factors that motivated their company to diversify into other construction related activities?”. Table 3 summarizes and reports on the driving factors for vertical integration to Tanzanian construction firms as explained by the interviewees. It is noted that, the most mentioned driving factors of vertical integration in the Tanzanian construction industry are: ‘the need for quality.

Table 2: Profile of Interviewees

Case	Interviewees	Designation	Experience in construction industry (Years)
Case 1	A	Deputy general Manager	6-10
	B	Engineering Department Manager.	11-15
	C	Project Manager	6-10
	D	General Manager	16-20
	E	Finance department manager	11-15
Case 2	F	Financial Manager	11-15
	G	Chief Executive officer	6-10
	H	Project coordinator.	>20
	I	Managing Director	0-5
	J	Chairperson board of directors	>20
	K	Senior quantity Surveyor	6-10
Case 3	L	Manager Tendering and Estimation	6-10
	M	Senior project manager	16-20
	N	Managing Director	16-20
	O	Financial advisor	6-10

Improvements' (n=11), 'Increased competition'(n=11), 'Clients demands (n=9)', and 'Core competence'(n=9). These responses were tallied based on how many interviewees out of all 15 respondents mentioned that factor. The factors that were mentioned by less than 5 interviewees among fifteen were less significant. In this study only the top four mentioned drivers will be discussed.

Based on Table 3, 'desire for quality improvement' was mentioned by the majority (f=11). For instance, Interviewee A from case 1 was quoted saying:

Quality is the main factor in the construction Industry, if you construct a good quality building you can use it for many years without the need for renovation. So as a firm, we realized we could provide quality concrete with better strength if we produce it ourselves, that's how the idea of making ready mixed concrete with a batching plant came about. In the batching plant everything is computerized which makes it precise and with guaranteed quality. We supply concrete to our projects and other projects.

Likewise, Interviewee E explained that:

In order to maintain quality, we decided to do a number of things in house, so we can have more control of quality, and this became our competitive advantage through better pricing.

This finding is like existing studies (Al Sayegh, 2010; Davis and Pitts, 2004; Singh *et al.*, 2004). Example Singh *et al.* (2004) emphasized that 74% of quality related problems can be solved by adopting vertical integration. Davis and Pitts (2004) also stated that the ability to control inputs in the production chain can decrease defects and hence gain the firm a huge competitive advantage.

Another driver mentioned by most interviewees was 'increased competition' within the industry. Recently Tanzania has witnessed growth in the construction industry as the result of the country's investments in building and infrastructure projects (Kikwasi and Escalante, 2018). For instance, Interviewee J from Case 1 acknowledged that:

For our company, we have been in business for over 40 years, we have seen the Tanzanian construction industry grow and change to be what it is today. It is almost like vertical integration was a natural strategy for our firm as a result of changes that happened in the industry, with time the industry kept on being more competitive, it became harder to win tenders so we had to find a way that could reduce cost in order to give us a competitive advantage.

Guan and Rehme, (2012) agrees with this fact as they claimed that increase in competition forces firms to integrate.

Table 3: Summary of Interview responses on the driving factors for vertical integration

No.	Driving Factors for vertical integration	Interviewees															Total
		Case 1					Case 2					Case 3					
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
1	Need for quality improvements	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11	
2	Clients demands	✓	✓	✓	✓	✓				✓	✓		✓	✓		9	
3	Competition	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	11	
4	Familiarity and Core competence	✓	✓	✓	✓	✓				✓	✓		✓		✓	9	
5	Market availability			✓			✓	✓		✓					✓	5	
6	Business expansion	✓		✓				✓						✓		4	
7	Financial pressures	✓														1	
8	Improved profitability	✓											✓		✓	3	
9	Need to protect core business secrets	✓														1	
10	Unavailability of materials		✓										✓	✓		3	
11	Idle labour and equipment		✓			✓				✓	✓					4	
12	Company's good reputation							✓		✓	✓					3	
13	Buildability challenges									✓						1	
14	Company's vision to grow									✓	✓			✓		3	
15	Availability of capital										✓					1	
16	Cost advantages											✓			✓	2	
17	Contractual conflicts												✓			1	
18	Technological interdependencies													✓		1	

The need to satisfy several clients was another significant driver which led the companies to undergo vertical integration. Interviewee B revealed that:

Material suppliers can be a headache, depending on them and yet you commit yourself to deliver a project on time, automatically gets you in trouble with clients. We had to ask ourselves why do we have problems with our clients all the time over something that we can do ourselves in a timely manner? Basically, the need to satisfy our clients motivated us to start supplying glass to our own construction projects as well as other projects

Equally, Cook and Garver (2002) also supported that integration can be sparked by the desire to satisfy diverse customer needs while maintaining lower costs. The fourth most mentioned driver is the Core competence. This was also mentioned by 9 respondents across the three case studies. Many interviewees pointed out that vertical integration was a result of them being familiar with the construction industry and having that core competence that allowed them to navigate easily through other construction related lines of business. Interviewee O contended that;

We are quite competent in the construction industry, our reputation as contractors precedes us. So, for us it was easier to expand our business in the same industry that we are familiar with and because of the core competence, we did not need a lot of new employees, mostly we just had to train the employees we already had which made it a lot easier.

Therefore, based on the identified drivers the reported findings demonstrate clearly what compelled/motivated these firms to adopt VI which is essential information for promoting VI in Tanzanian construction industry as well as in other similar countries.

**Challenges Associated with Vertical Integration in Construction**

In trying to assess the challenges of VI strategy in relation to the construction industry, the respondents were asked about the challenges that their companies face as a result of adopting VI. The following were identified as major challenges; 'nature of contracts', 'need for high investments', 'lack of support from the government', 'increase in business risk' and 'reduced strategic flexibility' as summarized in Table 4 below. Nature of contract was mentioned by 9 respondents from all the three cases. The major argument was that firms which have integrated to do both designing and constructing under design and build contracts.

Table 4: Summary of Interview responses on the challenges of vertical integration

	Challenges of vertical integration	Interviewees															Total
		CASE 1					CASE 2					CASE 3					
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
1	Nature of contracts	✓		✓	✓	✓	✓					✓	✓	✓	✓	9	
2	Need for high investments	✓			✓	✓		✓	✓	✓						7	
3	Lack of support from the government	✓		✓	✓		✓				✓			✓	✓	7	
4	Increased business risk	✓			✓				✓		✓	✓			✓	6	
5	Decrease strategic flexibility	✓	✓		✓	✓				✓	✓					7	
6	Failure of the main business	✓							✓		✓			✓		4	
7	Design changes	✓								✓						2	
8	Surplus of materials	✓							✓	✓	✓	✓				4	
9	Abrupt technological changes		✓						✓		✓			✓	✓	5	
10	Need for high supervision to ensure quality		✓													1	
11	Decrease flow of knowledge from outside the firm					✓						✓				2	
12	Management bureaucracy						✓		✓		✓	✓				4	
13	Lack of specialization							✓			✓		✓	✓		4	
14	High exit barriers							✓								1	

when there are a few designs and build contracts in the market its loss for them since they have invested a lot of capital to make the system work. Example Interviewee M highlighted that:

There is no point of having the designing department within the company if most contracts are following traditional approach., it was discouraging to integrate into designing back in the days' because of inadequate projects of that nature.

Need for high investment was also mentioned by 7 respondents. The majority claimed that although in a long run vertical integration reduce production cost and enjoy economies of scale as a result of producing in large quantities the challenge behind this is high cost of capital to run the business. Interviewee G highlighted that

Our firm bought a batching plant about 8 years ago although we wanted to make our own concrete way before that, but we had to wait until we had enough capital.

This finding is consistent with Desai and Mukherji (2001) implying that the need for high capital is not the challenge only in Tanzania but also in developed economies. Therefore, concluding that adoption of VI requires high capital.

Lack of support from the government appeared to be a unique challenge identified in Tanzania as there wasn't any study with a similar challenge. Interviewee N, highly emphasized on the need for government support to construction firms in developing countries. He further explained that in few years ago most public infrastructure and building projects in Tanzania were only contracted to public construction firms living private firms struggling and some collapsing due to lack of works. Increased business risk was also another challenge Interviewee C explained that:

Construction is a very spontaneous industry, to be a competitive player you need to have the ability to change rapidly with the industry, a high degree of vertical integration could reduce the ability of a firm to change rapidly and hence increase risk of failure.

Al Sayegh (2010) supported this result inferring that VI comes with additional risks. Thus, the identified challenges create awareness and serve as a reference point for enhancing the knowledge of industry stakeholders on the possible challenges which could lead to failure when adopting VI in the construction industry despite its significance.

## CONCLUSIONS

This study aimed to identify driving factors and challenges encountered in the application of vertical integration in the Tanzanian construction industry. The



findings showed that Tanzanian construction firms are vertically integrated in both ways, forward and backwards. The top three driving factors were increase in competition, quality improvement and client satisfaction. Whereas, nature of contracts, high investment cost, decrease strategic flexibility and increased business risk were the most mentioned challenges. The results of this study will contribute to the body of knowledge and will enhance the application of Vertical Integration in the Tanzanian Construction Industry. Additionally, the identified findings can assist industry practitioners and stakeholders interested in growing/expanding their business or adopting VI as a strategy to tackle some of the existing challenges (such as quality issues and delays) they have been facing. Likewise, these findings have created the need to address the challenges in order to support the growth of firms and the industry within Tanzania and other similar countries in Sub-Saharan Africa. On the other hand, the study recommends that, firms need to undertake strength weakness, opportunity and threat analysis before adopting vertical integration in order to be prepared and avoid the emergent challenges to realize the company objectives.

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