

## VALUE CREATION AND INHERENT CONSTRAINTS IN THE MALAWIAN CONSTRUCTION INDUSTRY

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### ABSTRACT

*One aspect of project management that requires attention is value creation and inherent challenges in the construction industry. The purpose of the research is to ascertain the factors affecting value creation and to understand how project actors in the Malawian construction industry create value. The qualitative inquiry strategy employed in this study was phenomenology. The purposive sampling method establishes an avenue for interviewing construction project actors who could share their perceptions on the phenomenon. Twenty-nine (29) interviews were conducted in Malawi. The face-to-face meetings involve public sector clients, consultants, contractors, and suppliers who conceptually create value in Malawian construction. The research reveals that the use of different construction standards and specifications, high frequency of non-value adding activities during project implementation, inadequate infrastructure facilities and non-conducive economic environment constrain value creation in Malawian construction. The creation of value in Malawian construction has to tackle these constraints to ensure success in project delivery.*

**KEYWORDS:** Construction, Malawi, Supply chains, Value creation.

### INTRODUCTION

Winch (2010) states that construction projects create value through capital and human resources. The capital resources include the cost of investment, while the human resources transform ideas into reality. The return on capital from the process is the profit taken out of the process by participating firms, while the yield on human resources is the learning that takes place as problems are solved through the project life cycle. However, it is worth noting that the practical achievement of these returns on the resources deployed in the creation of constructed assets is problematic since construction firms have low profitability compared to other sectors, and learning often stays with the individual, rather than captured by the company (Winch, 2010).

The value chain describes the full range of activities, which are required to bring a product or service from conception, through the different phases of production involving a combination of physical transformation and the input of various producer services, delivery to the final consumer, and final disposal after use (Kaplinsky & Morris, 2001). Value for construction clients is created through projects carried out by people working in relationships that are collaborative. These people are employed by some firms located within the various tiers in

the supply chain established by contractors and client organizations (Pryke, 2012). In construction, the supply chain includes subcontractors and suppliers as well as the processes within the business itself (Fisher & Morledge, 2002). It contains all the parties involved in designing, building and delivering services for a project. A supply chain becomes a value chain when all participants put exceptional care and effort into providing value to the direct and indirect customers and for removing wastes from the project delivery systems (Pryke, 2012). In the end, value delivered in a value chain is reflected in the profitability of all chain's participants (The Mechanical Contracting Education and Research Foundation MCERF, 2004). The criteria for success in a project depends on various factors such as the timely, and cost-efficient delivery of materials, systems, and facilities by quality requirements, as there are many stakeholders, contractors, and suppliers involved in a project. The management of supply chain methodologies and processes becomes crucial to ensure that project resources are delivered as required (Basu, 2011).

Value creation is a process facilitated through the supply chain. To achieve the expected value, the supply chain is managed correctly. However, maintaining supply chains in the construction industry have its difficulties. Factors such as lack of trust, adversarial relationships, transient nature of projects and number of infrequent clients are significant problems associated with imperfect creation through the astute management of a supply chain (Morledge, Knight & Grada, 2009). The purpose of this article is to contribute to the value creation debate by illustrating how project actors in the construction industry in Malawi create value.

The creation of value in Malawian construction depends on several factors that constitute constraints in the sector. For example, construction of projects is challenged by some problems in Malawi. Such problems result in a cost overrun, project delays and sub-standard work where contractors are blamed for the poor delivery of construction projects.

The National Industry Council of Malawi (NCIC) regulates the construction industry in Malawi. The NCIC was created through an Act of Parliament (Act No. 19 of 1996). The NCIC is mandated to build capacity in the Malawian construction industry. The NCIC is privately funded by receiving its income from registration fees of contractors, consultants, charges from training courses, and a levy from all contracts awarded in Malawi. Other institutions responsible for construction in Malawi include the Malawi Board of Engineers, the Architects, Quantity Surveyors Board, and the Office of the Director of Public Procurement.

However, the construction industry in Malawi as is the case in many countries in Sub-Saharan Africa is facing many challenges for it to perform (World Economic Forum WEF, 2013). For example, difficulties include contractor capacity problems such as cash flow problems due to delayed payment and lack of flexible credit facilities; poor craft due to lack of skilled labour and inferior quality construction materials; unstable economic environment; price escalations and poor stakeholder management (Emuze & Kadangwe, 2014). The unethical behaviour practiced in the construction industry such as client personnel who are involved in preparing and evaluating tender documents that they have previously priced with scheming firms should be addressed (Chiocha, 2009; Chilipunde, 2010). The capacity problem in procurement entities due to inadequate training, attitude problems, failure to adapt to change and lack of interest is also affecting the acquisition process. The tendency by suppliers to inflate their prices when dealing with public institutions and to procure officers

demanding for rewards to award contracts to suppliers are some of the challenges faced regarding public procurement in Malawi (Office of Director of Public Procurement ODPP, 2008).

Furthermore, it should be noted that the performance of the entire value chain should be optimum for the construction industry to deliver expectations of clients and the end-users. Thus, the research problem examined is the *'inability of the supply chain to create and sustain expected value for clients of construction products in Malawi.'* To resolve the problem, an attempt was made to answer one question, which sought the response to how do actors involved in project delivery in Malawi create 'value'?

## LITERATURE REVIEW

### The Concept of Value in the Construction Industry

The idea of value is defined as the relationship between satisfying an organization's many conflicting needs and the resources required to meet these needs. The fewer some resources used or, the higher the satisfaction, the greater the value. The value in projects is added in several ways. These include providing higher levels of client satisfaction, maintaining acceptable levels of satisfaction while lowering resources expenditure, or some combination of the two. It is also possible to improve value by simultaneously increasing satisfaction and resources if satisfaction increases more than the resources used to achieve it (Venkataraman & Pinto, 2008). The 'utility value,' 'the exchange value' and 'the esteem value' are the three factors that influence value (Dallas, 2006).

Langford, Martinez, and Bititci (2003) give a broader picture of value in a construction project by proposing that value should be defined as a system and as a flow. They are of the opinion that value systems and value flow try to give a new approach to the value definition from the two different perspectives, namely 'client' and 'contractor.' Hence, value flows from suppliers/ contractors to clients as well as from clients to contractors as shown in Figure 1.

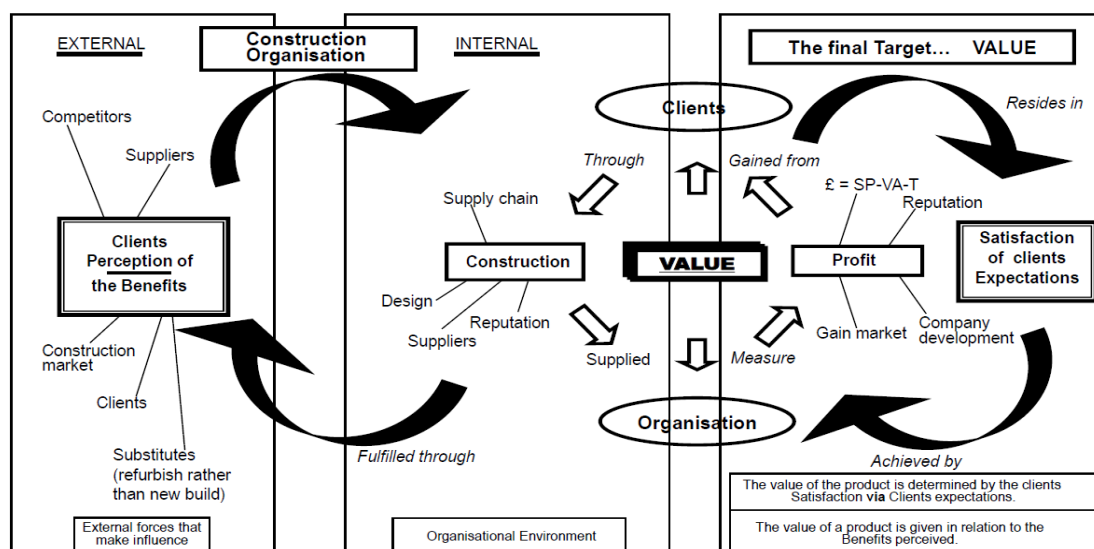


Figure 1: The Value Systems and value Flow (Langford et al., 2013:12)

Walker (2012) concluded that firms deliver value in a variety of ways. The preferred strategic stance of the client or the coordinating firm managing the supply chain mediates the perception of value. This value evolves through knowledge, competence and by developing an efficient, effective and sustainable project design that provides the benefits expected by the client or through the resources required to deliver the outputs to the expected five criteria of efficiency, effectiveness, relevance, sustainability, and impact. Value is also achieved through providing the needed engagement with and commitment to the client by dynamically responding not only to 'normal' turbulences associated with uncertain ventures but also to other exigencies that may emerge because of a potentially changing economic environment over the life of a project.

In a study of construction projects in Hong Kong, China, Wong, Cheung and Chan (2004) identified 15 value-creating activities for construction projects. The Hong Kong study indicates that maintaining effective and sufficient communication on site, understanding the client's requirements and ensuring efficient information flow are critical activities in value adding. While, understanding client's needs, facilitating better time management, and timely decision-making are the critical activities concerning cost saving. It is notable that implementing punishment schemes is ranked very low as Wong *et al.* (2004) argue that by applying punishment schemes, collaboration among project team members is discouraged. Thus, by avoiding punishment, project team members may hesitate to share innovative ideas or alternative construction methods, even if these may generate better values of the project.

### Non-value Adding Activities in Construction Projects

Alwi, Hampson and Mahomed (2002a) mention that the term 'non-value adding activity' is used to differentiate between solid construction waste found on-site, and other waste which occurs during the construction process. Thus, waste in construction is not only focussed on some waste materials onsite, but also related to several activities such as overproduction, waiting time, material handling, processing, inventories, and movement of workers.

The main categories of waste during the construction process are rework, defects, material waste, delays, waiting, poor material allocation, unnecessary material handling, and material waste (Alwi *et al.*, 2002a). Alwi, Hampson and Mahomed (2002b) argue that all those activities that produce cost and take time, resources or require storage, but do not add value or progress to the product is called non-value adding activities or waste. The study conducted in Indonesian construction determined that repair of finished work, waiting for materials, delay to schedule, and design changes were the key variables causing waste in the industry (Alwi *et al.*, 2002b). The study further revealed the major causes of waste include a lack of skilled personnel, non-conforming materials, late delivery of materials to the site, as well as waiting for materials to be delivered from storage to other areas on the site, inclement weather, design changes and slow decision-making.

Al-Mudimigh, Zairi and Ahmed (2004) suggest that price pressure, poor communication, and lack of leadership, inadequate knowledge/training, corporate philosophical differences, and lack of trust and technology incompatibility are significant challenges to value chain optimisation in the construction industry. In a South African construction study, Emuze (2011) established that time and cost overruns, variations/claims, reduced productivity and client dissatisfaction are the major impacts of non-value adding activities on projects while issues such as incidents/accidents, and fatigue and damage to the environment rank the lowest

in terms of non-value adding activities. Senaratne and Wijesiri (2008) have however recommended some methods and techniques that can reduce non-value adding activities on projects. Such techniques include Just-in-Time (JIT), Total Quality Management (TQM), Multinational Task Group and Kaizen.

## METHODOLOGY

The qualitative inquiry strategy employed in this study was phenomenology. The technique was chosen as the essence of the research required understanding the perspectives of the players in the Malawian construction industry. The study obtained insights on the topic as opposed to a statistical generalization of perception within a population sample. Creswell (2013) says phenomenological research helps the researcher identifies the 'essence' of human experiences described by participants in a study. Leedy and Ormrod (2010) define phenomenology as endeavours enacted to understand the views of people to comprehend the nature of a phenomenon. According to Borrego, Douglas and Amelink (2009), qualitative research is useful for approaches in which a theory justifies the purpose statement and the direction of a narrowly defined research questions.

Saunders *et al.* (2009) state that a sample size of between 25 and 30 is sufficient to conduct interviews in a qualitative study. Creswell (2012) noted that groups partaking in phenomenological research could vary between 3 and 15 individuals. The number of participants in a phenomenology study such as the one reported in this article does not, therefore, allow statistically significant generalization.

The sample population includes general contractors, consultants, specialist suppliers, general suppliers, and client organizations. Purposive sampling technique was used in the study. The purposive sampling technique was used for selecting interviewees considered knowledgeable enough for the inquiry. Time, cost, and experience were discussed in the choice of the purposive sampling technique for this study (Creswell, 2013). The contractors, consultants, and suppliers were drawn from the NCIC database.

**Table 1. Construction industry experience of interviewees in years**

Category	Response (no.)				
	1-5yrs	5-10yrs	10-15yrs	15-20yrs	> 20yrs
General Contractor	0	1	4	4	5
Consultant	0	0	2	0	2
Supplier	0	1	3	2	1
Client	0	1	1	1	1

The original sample consisted of 30 participants, but only 29 participants took part in the study. The sample distribution entails 14 contractors, four consultants, seven suppliers, and four clients. Regarding general industry experience, five contractors, two consultants, one supplier, and one client have more than 20 years of experience. The lowest experience period that was recorded is ten years (Table 1). The participants had different academic qualifications, which ranged from diplomas to postgraduate qualifications.

**Table 2. Educational level and job titles of interviewees interview respondents**

Highest Educational Level	Job Titles	Number
Diploma	Director/Manager	6
Degree	Director/Manager/Architect/QS	13
Postgraduate Degree	Director/Manager/Chief Executive Officer	10
<b>TOTAL</b>		<b>29</b>

## DISCUSSION OF RESULTS AND FINDINGS

The data that were tape recorded before transcription were collected through face-to-face interviews. The transcribed data were scrutinized based on Moustakas' (1994 cited in Creswell 2012) approach to phenomenological analysis. The transcripts were examined to select major statements, which were treated as being of equal value. Following this step, repetitive and overlapping comments were removed to eliminate duplication. The important statements were then grouped into themes as in the interview protocol. Textural and structural descriptions, relative to the significant statements were drafted by explaining what and how interviewees experienced the phenomenon.

This section of the article responds to the main research questions posed in section one. In particular, the interviewees were asked questions regarding:

- How do they add value to their customers?
- How can the add value in the construction value chain?
- What is the non-value adding activitie and their causes in Malawian construction?

When responding to the questions, the interviewees also mentioned their experiences about the constraints affecting the industry in the form of lack of plant and equipment, and the poor level of communication during project implementation.

### Value Addition to Customers

The participants were asked to mention how they add value to their customers or end users. The various responses have been recorded concerning the category in which the participants appear in the construction value chain.

The contractors mentioned that producing a quality product, on time and within cost, is how they add value to the customer. Other participants mentioned that they add value by doing their job according to specified standards and ensuring that the project should last according to the expected lifespan. Other values adding activities by contractors include advising clients regarding the choice of materials, alternative designs, and best method of constructing to save costs. Additionally, the participants mentioned that as they undertake projects, they make sure that the product is built in an environmentally friendly manner. A contractor participant, who specializes in finishes, mentioned that their job is to add value to any building. Thus they add value by not just installing an ordinary door or window, but beautifying it, and providing quality finishes. Another contractor participant mentioned that the firm advises the client on the best method for producing products by giving alternatives, which at the end of the day will be very economical to the client.

The consultants mentioned that they add value to clients by giving them the necessary advice on the alternative designs and technologies available with cost comparisons, conforming to set standards and specifications, and providing contract management services concerning cost, quality, and time management. A consultant mentioned that although the client provides them a brief, including a schedule of areas, the firm normally advises the client on the standards for different spaces. The consultant further advises the client on the available technologies regarding the building blocks to be used such as burnt brick, soil stabilized blocks, or concrete blocks, and over and above that the firm make a cost comparison so that the client will know the cost implication of each alternative technology available. Another consultant admitted that the industry as a whole does not do much regarding value addition to the client, apart from specifying what is known in the industry. He elaborated that the industry merely repeats practices instead of conducting research and development. In essence, the consultant express the opinion that the industry is lacking the zeal and foresight to determine what else can be used in the industry concerning creativity and innovation.

The supplier participants mentioned that they add value to their customers by supplying a product at a good price, providing an after-sale follow up to ensure that the product they have produced has no problems, and offer technical back up service. A supplier also mentioned that his product is better than any of his competitors as it lasts four times longer, hence giving the customer value for money. Another participant mentioned that Malawi is full of fake products, and as such, he stocks three types of the same product that are labeled as low, medium, and high-quality products. Thus, customers are advised accordingly regarding the quality of the product they wish to purchase and the cost implication attached to the product. The participant then mentioned that by stocking various quality options for the same product and offering them at different prices, he could satisfy different segments of the market.

### **Value Addition in the Construction Supply Chain**

Under this particular theme, the participants were asked to mention the areas in the construction supply chain where they can add more value. The interview sessions allowed the participations to cite project actors with the most significant capacity to create value in the value chain.

When responding to the questions in the section of the interview protocol, the contractors mentioned that they could add more value by offering advice regarding pre-construction services by assisting in recommending well nominated or domestic subcontractors and helping in facilities management. The contractors also mentioned that one area in which they can add value is advising consultants on the quality of construction materials available in the market, and ensuring that suppliers procure quality materials. They also mentioned that they add value in the value chain by training more people on the aspects of construction. Such training is provided to client and consultant representatives. The contractors mentioned that being at the hub of the construction value chain, they can offer increased collaboration among all members of the value chain; engage financial institutions to understand the dynamics of the construction industry, and engage knowledge organizations in the latest trends in construction.

A particular contractor contends that project actors must be consulted, even though the consultations can be done at different stages of the project, to get the best out of a project. He was of the opinion that using the best way of producing a product helps to enhance value creation.

Furthermore, the consultants mentioned that they could add more value by using their experience in working with specialist subcontractors to recommend the ideal project actor suitable for a job. They suggest that consultants are in a unique position that links the client to the rest of the value chain. The vantage position can foster increased collaboration and communication amongst all value chain members. The consultants also say that the increased usage of modular designs to accommodate standard material sizes to minimise waste on site is gaining traction in the industry. Further to this, they claim that they can also engage suppliers so that they know and understand the segment of their market. A consultant mentioned that most clients lack the knowledge of how the industry works and do not know what role an architect plays, and what role an engineer plays. He, therefore, mentioned that consultants must educate clients regarding the roles played by each actor in the construction industry.

Suppliers that responded to the questions in this section perceive that they add more value by regularly updating consultants and contractors about the latest products in the market. The updates include information on technical specifications and utility. The suppliers also ensure that consultants are particular about material specifications considering that the knowledge levels of small contractors are limited to technical matters. An insightful claim emerges from a supplier who says that contractors and suppliers have overtaken consultants concerning product knowledge and as such, it is becoming difficult for consultants to advise contractors concerning what construction material products they can use, or not use on a project. Hence, contractors can bypass the consultants and procure construction materials directly from suppliers.

### **Causes of Non-value Adding activities in the Construction Supply Chain**

The participants were asked to mention the type of non-value adding activities they frequently encounter in the construction industry. While describing a range of causes, the participants mentioned the following non-value adding activities:

- Poor material handling due to lack of knowledge and lack of supervision;
- Material wastage due to lack of knowledge, lack of proper site supervision, and poor conditions of employment leading to unethical behavior;
- Defects due to shoddy craft and inferior materials used;
- Delays owing to contractor cash flow problems, lack of communication and coordination on site, non-availability of materials, poor designs, inclement weather, frequent absenteeism of workforce, and lengthy procurement period;
- Rework due to shoddy craft and lack of supervision, and
- Waiting due to incomplete documentation and lack of information on site.

One participant mentioned that non-value adding activities are happening a lot on projects. He says two reasons why non-value adding activities occur on a project. The first reason is due to lack of artisan skills where some activities routinely undergo a rework cycle. Examples of such activities include plastering work that must be completed several times before it is certified adequate. The non-alignment of plaster or wrong levels applied by an artisan is always cited as the cause of this malady. The second reason is that of economic factors whereby workers are not adequately paid, and they end up mixing weak mortar or concrete by putting more aggregate and less cement so that they can take home some cement



and sell it. However, the participant mentioned that such kind of waste is covered in their pricing strategy. Another contractor suggested that poor communication manifests in delays on projects. He suggested that most of the time, the consultant is unprepared and cannot issue appropriate instructions. The obstruction from designers and consultants mushroom on site as contractors may become idle for lack of work due to waiting to be released with instructions.

However, one contractor mentioned that despite lack of skills and poor quality materials being the major causes of non-value adding activities in construction, greed on the part of contractors is also a major factor. He gives an example of where a contractor deliberately uses inferior quality materials such as a paint that peels off before a building is occupied. He also mentions instances, where consultants are not prudent enough to check on the quality of materials used on a project. These have been encountered in the industry.

### Constraints in the Construction Industry

Most of the participants whose projects are in rural, remote areas mentioned that poor road conditions that make access to the site very difficult are the major infrastructure constraint they face in the construction industry. Power interruption is another primary constraint, especially to the participants working in multiple locations. Another obstacle mentioned was poor welfare facilities for people working in rural areas. The participants also indicated the slow internet traffic in Malawi is a significant constraint in the industry.

It is notable that very few participants mentioned that they own all the plant they need for their projects. The participants hire their plants from Caterpillar dealers and the government plant hire association. Some contractors also hire out a plant. These contractors are in the minority. Participants who do not own plant mentioned that only the government offers fair rates for plant hire while the other plant utilizes firms are costly. Some of the contractors suggested that the condition of their owned plant is in a poor state, which constitutes barriers to the running of their business because of high maintenance costs. A contractor mentioned that the inferior status of the plant and equipment is preventing their firm from undertaking some projects that require high usage of specific plant and equipment. Another civil contractor mentioned that all the graders he owns are in a very poor condition. He further says that not many contractors own plant and equipment in Malawi and as such those who hold plant are overcharging to hire out their plant.

### Communication during Project Implementation

The participants differed on how they perceive the level of communication during project implementation. Some participants mentioned that there is poor communication, while others suggested that the pre-scheduled site meetings are adequate to address the issues that arise during project implementation. The contractors perceive that verbal communication and written correspondences supplement site meetings. However, some participants mentioned that the nature of the relationship, which exists between consultants and contractors at times could be termed as 'master-slave' relationships. Other participants mentioned that there is too much finger pointing during site meetings. A contractor mentioned that level of communication varies from project to project. He mentioned that in some projects the channels and level of communication is very good, and information between various parties is up to date while in other projects there are problems in terms of information flow and the delays in providing vital information at the right time ends up affecting the overall performance of the project in terms of time. Another contractor cited an example of poor information strategy. The contractor observed that some consultants tend to communicate

very important information a few days before a project review meeting is about to take place, thus to appear to the client that they are properly doing their work. According to the contractors, this altitude creates confusion on the part of the contractor as he is left with very little time to attend to all issues at hand.

## CONCLUSION

Principal project actors create value in Malawian construction. For instance, consultants through the provision of design and supervision services add to the upstream value in the construction industry. Similarly, clients create value upstream of the construction process through fulfilling contractual obligations. The principal responsibility of the client during project implementation is the timely payment for completed services. Downstream of the construction process, contractors, subcontractors, and suppliers create value by fulfilling agreed performance requirements. However, this study reveals that value creation, downstream of the construction process, is facing a range of challenges. The challenges form the factors affecting the creation of value in the construction industry. Observed problems are not limited to delayed payments for work done, unstable prices of construction materials, high-interest rates, and poor communication between members upstream and downstream of the supply chain.

The study has also shown that the construction industry in Malawi does experience a lot of non-value adding activities in the form of rework, defects, delays, waiting, reduced material handling, and material waste. Most of these result from poor planning, inadequate supervision, weak management structures, poor craft, and unethical practices whereby contractors using inferior quality materials to maximize profit. Thus, non-value adding activities in the Malawian construction industry are caused by both internally generated factors within the industry and externally generated factors in which the industry has very little control over. In practice, project actors should control and monitor the factors causing low-value creation in the Malawian construction industry.

Given the qualitative nature of the study, the previously mentioned results should be interpreted only in context. In addition, the study just focused on critical members of the construction value chain who are directly involved in project implementation, namely public sector clients, consultants, contractors, and suppliers. However, future studies should go beyond these project actors to include support services, regulatory authorities, facilities managers, and end users. Therefore, further research should be conducted to understand how other members of the construction value chain, who are not directly involved in project implementation, perceive project success in the Malawian construction industry.

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