ID 38

Key Indicators for Successful Value Management Performance in the Built Environment (A Literature Review)

Comfort Olubukola Iyiola[1], and Modupe Cecilia Mewomo[2]

[1, 2]Department of Construction Management and Quantity Surveying,
Durban University of Technology, Durban, South Africa.
Modupem@dut.ac.za

Abstract

This research seeks to identify the indicators for measuring successful value management (VM) performance in the built environment based on literature review. Value management (VM) is commonly considered as a beneficial technique for construction firms to address obstacles in the construction sector, such as resource constraints, delay in delivery, cost overrun, time overrun, project abandonment and complexity. However, despite numerous studies on VM, the indicators for measuring the performance of VM have not been thoroughly investigated. This paper, therefore, discusses the key indicators for measuring successful VM performance in the built environment. A comprehensive assessment and analysis of chosen published journals is fundamental of the research. Journal papers, books, and conference proceedings were all included in the study on indicators for measuring successful performance of VM from different databases including ScienceDirect, Web of Science, Google Scholar, Science Direct, Scopus, etc. The performance indicators were categorized into process performance indicators and outcome performance indicators. The process performance indicators (integration, collaboration, standardization, organizational culture) are categorized as variables that must be considered in order to ensure effective VM practices while the outcome performance indicators are variables that indicates the effectiveness of VM practices. A careful evaluation of the performance indicators of VM studies is expected to enhance VM application and strengthen clients' confidence in their VM investment. The initial step in establishing a robust VM performance model is to identify variables that determines its successful integration. Thus, it is expected that the long pending quest of poor implementation of VM will be solved and successful delivery of construction projects will be enhanced. It will also become a useful reference to value managers, designers, architects and construction organisations for achieving building sustainability through VM practices.

Keywords

Performance Indicators, Value Management, Built Environment

1. Introduction

Value management (VM) is an integrative procedure which aims to maximize the worth of a building development operations from start to finish while also meeting the requirements of the clients (Tanko *et al.,* 2017; Thneibat *et al.,* 2021). Madushika *et al.* (2018), on the other hand, mentioned that VM is a strategy that aims to maintain a balance between cost, duration, and durability when employed. When VM is applied on a project, Aghimien and Oke (2015) found that great economic sustainability may be reached since participants have the opportunity to guarantee that building projects provide opportunities for attaining value for money. This means that a different cost management technique may be used at the lowest feasible cost without jeopardizing the project performance or goal.

Several studies have been carried out on the application and potential of VM to deliver sustainability in construction projects in advanced and developing nations. In the UK, for instance, Lin *et al.* (2011) emphasised the importance of VM for the successful delivery of construction projects to fit a nation's culture and the economy. In US, Luvara, and Mwemezi, (2017) indicated that VM practices have helped to improve the execution of building projects in the building sector. In Malaysia, the use of VM was made mandatory for all government projects by the

Economic Planning Unit of the country (Jaapar *et al.*, 2012). Also, VM has also been implemented by government parastatals in most advanced countries like USA, the UK, Hong Kong, China and Australia, to optimize public projects and achieve the worth of the money invested (Kim *et al.,* 2016; Kissi *et al.,* 2015). The relevance of VM techniques in the construction industry is recognized in this perspective. According to many definitions, the basic goal of VM is to improve the worth of the money. It is done by providing all essential functionalities at the lowest life cycle cost while ensuring the product or resource's quality and performance (Madushika *et al.,* 2018).

The insufficiency of currently available methods and approaches for measuring project success is confirmed in mainstream literature, raising doubts about the value and efficacy of project management (Mir & Pinnington 2014). In order to determine the usefulness of VM in enhancing construction project performance and cost effectiveness, it is necessary to measure its performance in construction projects (Al-gahtani *et al.* 2015). The necessity to quantify the achievements of building projects has necessitate the creation and deployment of a number of variables that determines the performance of VM (Haponava & Al-Jibouri 2009, Madushika *et al.,* 2018). A careful evaluation of the performance indicators of VM studies can help to improve VM implementation and integration and also provide clients more confidence in their VM investment (Lin *et al.* 2011). In the meanwhile, only a few research on evaluatingthe performance of VM in the built environment for building projects have been done. Lin *et al.* (2011), Al-gahtani *etal.* (2015), and Madushika *et al.* (2018) all conducted studies on performance indicators in the construction sector for measuring VM performance. These studies, on the other hand, are geared toward industrialized countries and have minimal relevance for emerging countries. A developed nation's construction sector differs from that of an unindustrialized nation, just as an industrialized economy differs from an unindustrialized economy. As a result, it is necessary to undertake a study on VM performance metrics in emerging nations as well. According to the literature, VM is applied haphazardly in the majority of developing countries (Oke & Aghimien, 2018; Alshehri, 2020; Ojo & Ogunsemi, 2019). There is no pre-defined strategy for using VM in the construction business, according to Aghimien *et al.* (2018) and Alshehri, (2020). As a result, the goal of this research is to establish the performance indicators for effective VM integration for the successful delivery of construction projects in the built environment. The outcomes of this research will help developing countries improve their VM practices.

2. Research Method

Based on the performance metrics, this study comprehensively assessed the relevance of VM in the built environment. The first step was to choose which papers will be included in this evaluation. The second step entailed creating and implementing precise rules of conduct that outlined how to collect and analyze information from the literature. The third stage involved combining the details that had been analyzed and determining the research findings. Journals and conference papers that highlight VM performance indicators were reviewed and found to meet the inclusion criteria for the study selection.

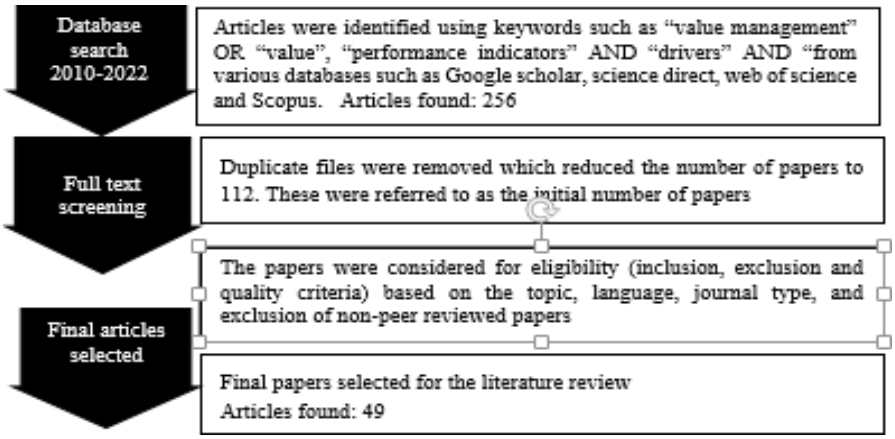

Fig. 1. Steps in the systematic literature review procedure and the resulting number of papers.

3. Results

3. 1 Process Driven Metrics

Table 3 presents the variables that measures effective VM performance through a comprehensive literature review. The process-driven metrics were categorized into; integration, collaboration, standardization, effective organisational culture. The project driven metrics aim to measure and monitor operational performance across an organisation. The process driven metrics offers great opportunities for construction firms to improve their process efficiency and they are extremely important for an organization to create value stream mapping.

Table 2. Process performance indicators

Process Performance Indicators	Variables	Sources
Integration	Early involvement of participants	Cao and Zhang (2011) and Shen and Yu (2014)
	VM action plan	Madushika *et al.*(2018)
	Primary function identified	Lin *et al.* (2011), Jaapar *et al.* (2012)
	Availability of resources	Annamalai and Ganapathy (2021)
	Accelerated decision making	Thneibat *et al.* (2021)
	Efficiency of idea generated	Kinebar *et al.* (2021), Kissi *et al.* (2015)
	Dedicated personnel	Coetzee (2010), Alshehri (2020)
	Communication among participants	Kissi *et al.* (2015)
	Availability of resources	Oke et al. (2018), Shen and Yu (2014)
Collaboration	Information and knowledge sharing	Cao and Zhang (2011)
	Decision alignment	Asri *et al.* (2021)
	Team building activities	Kokkonen and Vaagaasar (2018)
	Interaction among participants	Ferme *et al.* (2018)
	Client's support and participation	Hayatu (2015), Lin *et al.* (2011)
	Active client support	Kineber *et al.* (2021), Tanko *et al.* (2017)
Effective organisational culture	Management participation and commitment	Taghizadeh *et al.* (2012)
	Education and training	Nguyen and Watanabe (2017)
	Risk management	Oke and Aigbavboa (2018)
	Interpersonal relationship	Ekanayake *et al.* (2019)
	Top management support	Owoyemi and Ekwoaba (2014)
	Participants satisfaction	Oke and Aigbavboa (2018)
	Reward and incentive system	Cao and Zhang (2011)
Standardisation	Input of government and its agencies	Kim *et al.* (2016) and Aghimien *et al.* (2015)
	Mandatory VM training for construction professionals	Lin *et al.* (2011), Ojo *et al.* (2021),
	Government commitment to implement VM	Kineber *et al.* (2021), Tanko *et al,* (2017)
	Incorporating VM methods into construction procurement process	Ojo *et al.* (2021), Aigbavboa *et al.* (2016)
	Attendance of policy-makers on constant basis	Madushika *et al.* (2018)
	Effective policies and regulations supporting VM practices	Ojo *et al.* (2021), Madushika *et al.* (2018)

3.2 Outcome Performance Indicators

An outcome performance indicators are specific and measurable characteristics or change that will represent achievement of an effective VM process. These measures are used to determine the extent to which a core function, goal, activity, and services has impacted its intended audience. These measures are usually built around the specific purpose or result that the function, goal, service or activity, is intended to deliver or fulfill. The outcome measures should show progress towards or achievement of an organisations' mission and goals. These indicators are variables that indicates the effectiveness of a VM process.

Table. Outcome performance indicators

Variables	Sources
Reduced construction cost	Lin *et al.* (2011), Jaapar *et al.* (2012), Madushika *et al.* (2018), Oke *et al.* (2015), Algahtani *et al.* (2015), Thneibat *et al.* (2021)
Time management	Lin *et al.* (2011), Kissi *et al.* (2015), Kinebar *et al.* (2021)
Quality management system	Oke *et al.* (2015), Tanko *et al.* (2017), Madushika *et al.* (2018)
Client satisfaction	Kinebar *et al.* (2021), Thneibat *et al*. (2021), Aghimien and Oke (2015), Annamalai & Ganapathy (2021)
Return on investment	Ojo *et al.* (2021), Aigbavboa *et al.* (2016), Aghimien *et al.* (2016)
Risk reduction	Ranesh *et al.* (2012), Nnadi & Ezemerihe (2018), Masengesho *et al.* (2021), Alaqad *et al.* (2015), Hayatu (2015)
Whole life asset management	Jaapar *et al.* (2012), Kissi *et al.* (2015), Aigbavboa *et al.* (2016)
Long-term planning	Alshehri (2020), Lalevee *et al.* (2020), Ojo *et al.* (2021)
Improved project management	Kissi *et al.* (2015), Tanko *et al.* (2017), Oke & Aghimien (2018), Thneibat *et al*. (2021), Ojo *et al.* (2021),
Elimination of delay	Luvara & Mwemezi (2017), Ekanayake *et al.* (2019)
Effective project delivery	Mir & Pinnington (2014), Aghimien *et al.* (2018)
Improved economic quality	Oke *et al.* (2015), Thneibat *et al.* (2021), Tanko *et al.* (2017)
Promoted environmental quality	Carvalho & Rabechini (2017), Yu *et al.* (2018)
Enhanced social prosperity	Oke *et al.* (2015), Thneibat *et al.* (2021), Tanko *et al.* (2017)
Enhanced project functionality	Lin *et al.* (2011), Xiaoling *et al.* (2013), Ochieng *et al.* (2014)
Optimisation of value	Kissi *et al.* (2015), Aigbavboa *et al.* (2016), Lalevee *et al.* (2020)

4. Discussion of Findings

4. 1 Process Performance Indicators

4.1.1 Integration

Integration is the technique of bringing together diverse knowledge, expertise, and technology in order to optimize project results, which is particularly important for assuring the timely completion of construction projects (Olanipekun *et al.*, 2017) and it provides improved value to owners while also maintaining maximum efficiency across all design, fabrication, and construction phases. The studies conducted by Cao and Zhang (2011) and Shen and Yu (2014) recognised the importance of involving professionals in a construction projects. Sabiua *et al.* (2019) maintained that integration process refers to the procedure adopted for improving construction project performance through the syncing of information, process, and people. This opinion recognizes integration as a tool for ensuring operational performance. Annamalai and Ganapathy (2021) described VM integration as a systematic approach in construction for effective role in reducing cost and improving the delivery, functionality or quality of the project. The author described integration process as the level in which VM experts collaborate tactically to handle inter- and intra-organisational operations. This view also recognised that integration occur within and outside the firm. Integration refers to the informal or formal activity of combining information, procedures, and people into a single structure (Kissi *et al.*, 2015; Kinebar *et al.*, 2021; Thneibat *et al.*, 2021). The aforementioned phases of integration can only be achieved

through applying different practices necessary for integration (Coetzee, 2010; Alshehri, 2020). Aghimien and Oke (2015) concluded that the initial involvement of construction stakeholders is the most crucial practice for integration. In support of this opinion, Olanipekun *et al.* (2017) discovered that when construction stakeholders and professionals are involved in the early stage of VM, performance will be enhanced. Team colocation on a construction project was identified by Kokkonen and Vaagaasar (2018) to have an important component for integration. The role of VM guarantee that construction firms realise value in their projects while also meeting the expectations of their clients. It also handles the related budget limitations as well as constraint for reducing the additional cost while maintaining project quality and dependability (Aigbavboa *et al.,* 2016). From the foregoing, the success of VM performance is more related to integration.

4.1.2 Collaboration

Collaboration is one of the critical process that have to be fulfilled for ensuring VM performance. In order to improve the performance and delivery of construction projects in the construction industry, collaboration among members of the construction industry has been suggested by scholars (Ferme *et al.,* 2018; Qiang *et al.,* 2021). Also, Ojo *et al.* (2021) affirmed that there is need for enormous collaboration in the building industry due to the difficult, complex, geographically dispersed and multi-organisational nature of the industry. This study affirmed that collaboration entailed the coming together of two or more independent building professionals collaborating to schedule and implement construction project processes to enhance the performance of building projects. Collaboration between professionals is in the form of information sharing, resource sharing, decision alignment, team building activities, knowledge sharing, interaction among participants, improved communication and understanding (Cao and Zhang, 2011; Ferme *et al.,* 2018; Asri *et al.,* 2021). Ojo *et al.* (2021) believed that towards enhancing the performance and delivery of construction projects in building firms through VM, collaboration in the form of cross-sectional team effort is of utmost importance. c6) and Mallett (2017) also confirmed that the sharing of information solely depends on collaboration among construction professionals. Meng (2012) indicated that collaboration provides the opportunity to work jointly across organisation boundaries. Tomelleri *et al.* (2015) stated that collaboration occurs when building professionals agree to harmonize and align their objectives, information and decisions to achieve a common goal. It can be inferred from the above that collaboration entails accepting equal responsibility and commitment to achieve a common goal. Hayatu (2015) further argued that raising clients' knowledge of VM will stimulate its use in more building projects. These characteristics make collaboration crucial in VM process for achieving on-time delivery of the project.

4.1.3 Organisational culture

Organisational culture is one of the major attribute for ensuring VM performance in the building industry. Cadden *et al.* (2013) established that organizational culture is a form of behaviour developed over time by an 252rganization to adapt and solve problems. **Naranjo-Valencia *et al.* (2011) opined that 252rganization culture functions as a business structure that allows the** effortless sharing of information among members of an establishment. Features such as management support, management participation and commitment, and interpersonal relationship should be included in the corporate structure to promote VM. The senior management of the organization must coordinate their processes, strategies, and regulations with the associated project in order to implement VM throughout the organization (Taghizadeh *et al.,* 2012). Organisational culture is influenced by factors such as the organization's structure, the system and procedures by which work is completed, employees' preferences, the organization's customs and beliefs, and management and leadership styles. Moreover, this approach of continual improvement necessitates that manager's act as a genuine leader in the firm, ensuring that all employees participate and become active in all value chain operations (Taghizadeh *et al.,* 2012). Combined standards, beliefs, and assertions involving the way in which employees behave and interact, the way issues are being addressed and how actions are taken, and how roles and responsibilities should be carried out, altogether make up 252rganizational culture (Tedla, 2016). The background and environment of a firm, as well as the people that run and work for it, all have a role in its culture. Good governance necessitates a thorough understanding of the company's culture (Owoyemi & Ekwoaba, 2014). Top management will be better equipped to integrate strategy and accomplish their goals if they comprehend their company structure. The several essential success variables that have been investigated in the area of organization culture includes factors related to managerial involvement, information sharing, personal relations, education and training, rewards and

incentive systems, risk-sharing, adequate supervision, employees' participation, and decision making (Ekanayake *et al.,* 2019; Nguyen & Watanabe, 2017; Oke & Aigbavboa, 2018).

4.1.4 Standardisation

This study recognizes the impact of standardization as one of the performance indicator of VM. Standardization in this study was categorized into; input by relevant governmental and local authorities, VM study plan for implementation, clients' enforcement ability to communicate requirements to design team, government commitment to implement VM, and active client's support and participation. This supports the findings of Kim *et al.* (2016) and Aghimien *et al.* (2015), who mentioned that government interest in VM adoption, preparedness, client participation, and public awareness of VM are major performance criteria for VM. According to Kineber *et al.* (2021), the proactive efforts of the US government and its public agencies are enabling to enhance the implementation of VM throughout the US construction sector. When working on building projects for the US and Australian governments, similar VM approval rules are necessary. This demonstrates how government actions can contribute to the adoption and performance of VM in building projects. Kineber *et al.* (2021) also attributed clients' support and active involvement to improved VM performance. Therefore, involving client's and their commitment is paramount to the success of VM. Similarly, policymakers in the construction industry should be prepared to make this a part of organisation culture. The government could control all VM initiatives and regulations because it has the largest significant amount of capital development in the form of property and infrastructure assets (Tanko *et al.,* 2017). As a result, active government support and engagement in the application of VM is crucial (Tanko *et al.,* 2017). The responsibility (i.e. obligatory environmental requirements) for implementing sustainability criteria will be resolved if authorities work with the clients and senior management to clearly define and provide appropriate assistance (i.e. financial rewards).

4.2 Outcome Performance Indicators

This study recognized the outcome performance indicators of VM as the expected benefit or output for adopting VM in the construction industry. The study found that cost saving practice, time-saving practice, clients' satisfaction, quality management, among others, were the major outcome of effective VM performance. Tony and Tam (2013) and Madushika *et al.* (2018) recommended that cost savings is one of the major output for adopting VM in the construction industry. In the same vein, Nnadi and Ezemerihe (2018) ascertained that adopting VM is a valuable strategy for dealing with risks and uncertainties that may arise throughout the construction process, as well as for improving risk response efficiency. As a result, risk consultants are advised to use VM approaches as a strategy to curb the issue of risk for effective project delivery. VM technique, according to Lalevee *et al.* (2020), is effective in integrating sustainable components in the process of developing construction projects, which is one of the outcome of effective VM practices. Quality management was also proven to be a significant output of VM performance. Incorporating VM in the construction sector, according to Xiaoling *et al.* (2013) and Ochieng *et al.* (2014) will increase the quality standard and efficiency. This supports the findings of Oke *et al.* (2015) and Martens and Carvalho (2016), who found that implementing VM effectively enhances the quality of construction projects. In addition, VM is a key contributor to the development of innovative solutions to minimize construction waste and achieve sustainability goals (Kolo & Ibrahim, 2010). The framework was created in response to its requirement to meet sustainability goals by reducing construction waste throughout the design phase. This is because decisions taken early in the design process have a significant influence on the project's long-term viability. Incorporating sustainability into the building process from the beginning and all through the construction process is critical for the success and productivity of a construction project as it enhances decision-making among professionals (Carvalho & Rabechini, 2017; Yu *et al.,* 2018). The qualities of VM, such as the collaboration of professionals with mixed skills and competency ensures an effective job plan, promote high engagement, sharing of knowledge, and efficiency. Better corporate decisions, higher productivity, improved goods and services, improved communication process, cooperation, and decisions that can be backed by all stakeholders are just a few of the benefits of VM. According to Oke *et al.* (2018) and Yu *et al.* (2018), dedication to economic sustainability includes strengthening operating efficiency through effective utilization of resources (human, materials, finance), effective design, and good management, planning, and control; environmental sustainability includes using natural resources, encouraging renewable resources, and protecting the soil, water, and air from contaminations, among other things; and social sustainability includes interdisciplinary collaboration. As a result, VM is a viable and recommended means of achieving sustainability (Kineber *et al.,* 2021).

5. Conclusions

This research has presented the results of qualitative content analysis on key indicators for successful VM performance in the built environment. This study divided the performance indicators into two which are; the process-driven metrics and outcome performance indicators of VM. The process driven metrics which were categorized into; integration, collaboration, standardization, and organisational culture are variables that must be considered in order to ensure effective VM performance while the outcome performance indicators are variables that indicates the effectiveness of VM practices. This article concluded that incorporating all the aforementioned VM attributes (process driven metrics), will ensure the outcome performance indicators that will be derived from the effectiveness of VM practices in the built environment. Thus, it is intended to resolve the long pending pursuit of poor implementation of VM among construction professionals and form a basis to promote VM practices to achieve successful delivery and sustainability of construction projects. Continuous performance measures of VM will help in achieving efficient implementation of VM in construction industry. It will serve as a notable reference for value managers, designers, architects, and construction companies interested in using VM to achieve building sustainability. Furthermore, the outcome of this study can be utilized as a starting point for future VM research investigations. The study is also beneficial to all VM professionals working in the built environment and the findings can be implemented into construction professional's work ethics to improve productivity.

References

Aghimien, D.O. and Oke, A.E. (2015). Application of Value Management to Selected Construction Projects in Nigeria. *Developing Country Studies*, 5(17), 8-14.

Aghimien, D.O., Oke, A.E. and Aigbavboa, C.O. (2018). Barriers to the Adoption of Value Management in Developing Countries. *Engineering, Construction and Architectural Management*, 25(7), 818-834.

Aigbavboa, C., Oke, A.E. and Mojele, S. (2016). Contribution of Value Management to Construction Projects in South Africa. 5th Construction Management Conference. At: Protea Marine Hotel, Cape Town, South Africa.

Al-gahtani, K., Al-Sulaihi, I., Al-Rasheed, R. and Batarfi, A. (2015). Key Performance Indicators for Value Management in Saudi Construction Industry, *International Journal of Application or Innovation in Engineering & Management*, 4(11), 54-62.

Alshehri, A. (2020). Value Management Practices in Construction Industry: An Analytical Review. *The Open Civil Engineering Journal*, 14(1), 10-19.

Annamalai, M. and Ganapathy, C. (2021). Value Management in Construction Projects, 8, 2394-0697.

Asri, H.E., Jebbor, F. and Benhlima, L. (2021). Building a Domain Ontology for the Construction Industry: Towards Knowledge Sharing. Digital Technologies and Applications. In Book: Digital Technologies and Applications, 1061-1071.

Cadden, T., Marshall, D. and Cao, G. (2013). Opposites Attract: Organisational Culture and Supply Chain Performance. *Supply Chain Management: An International Journal*, 18(1), 86-103.

Cao, M. and Zhang, Q. (2011). Supply Chain Collaboration: Impact on Collaborative Advantage and Firm Performance. *Journal of Operations Management*, 29(3), 163-180.

Carvalho, M.M. and Rabechini, R. (2017). Can Project Sustainability Management Impact Project Success? An Empirical Study Applying a Contingent Approach. *International Journal of Project Management*, 35(6), 1120-1132.

Coetzee, C.E. (2010). Value Management in the Construction Industry: What Does It Entails and Is It a Worthwhile Practice? B.Sc. Thesis Submitted to the Department of Quantity Surveying, University of Pretoria, South Africa.

Edwards, D., Nimako, S., Owusu-Manu, D. and Conway, C. (2016). Antecedents of Supplier Relation Quality in the Ghanaian Construction Supply Chain. *Journal of Construction Supply Chain Management*, 6(1), 1-18.

Ekanayake, E.M.A.C., Shen, G. and Kumaraswamy, M.M. (2019). Mapping the Knowledge Domains of Value Management: A Bibliometric Approach. *Engineering, Construction and Architectural Management*, 26(3), 499-514.

Ferme, L., Zuo, J. and Rameezden, R. (2018). Improving Collaboration among Stakeholders in Green Building Projects: Role of Early Contractor Involvement, *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*, 10(4), 04518020

Haponava, T. and Al-Jibouri, S. (2009). Identifying Key Performance Indicators for Use in Control of Pre-project Stage Process in Construction, *International Journal of Productivity and Performance Management*, 58(2), 160-173.

Hayatu, U. (2015). An Assessment of the Nigerian Construction Industry's Readiness to Adopt Value Management Process in Effective Project Delivery. Unpublished M.Sc. Thesis, Zaria: Department of Quantity Surveying, Faculty of Environmental Design, Ahmadu Bello University.

Jaapar, A., Endut, I., Bari, N.A.A. and Takim, R. (2009). The Impact of Value Management Implementation in Malaysia. *Journal of Sustainable Development,* 2(2), 210-219.

Jaapar, A., Maznan, N.A. and Zawawi, M. (2012). Implementation of Value Management in Public Projects. *Procedia-Social and Behavioural Sciences*, 68, 77-86.

Kim, S.Y., Lee, Y., Nguyen, V.T. and Liu, T.V. (2016). Barriers to Applying Value Management in the Vietnamese Construction Industry. *Journal of Construction in Developing Countries*, 21(2), 55-80.

Kineber, A.F., Othman, I., Oke, A.E. and Chileshe, N. (2021). Exploring the Value Management Critical Success Factors for Residential Building – A Structural Equation Modelling Approach. *Journal of Cleaner Production*, 293.

Kissi, E., Boateng, E.B. and Adjei-Kumi, T. (2015). Strategies for Implementing Value Management in the Construction Industry of Ghana, Proceedings of the DII-2015 Conference on Infrastructure Development and Investment Strategies for Africa, 16-18th, September, Livingstone, Zambia.

Kokkonen, A. and Vaagaasar, A.L. (2018). Managing Collaborative Space in Multi-Partner Projects. *Construction management and Economics*, 36(2), 83-95.

Kolo, B.A. and Ibrahim, A.D. (2010). Value Management: How Adoptable is it in the Nigerian Construction Industry? In: Laryea, S., Leiringer, R. And Hughes, w. (Eds) Conference Proceedings of West Africa Built Environment, 2010, 653-663.

Lalevee, A., Troussier, N., Eric, B. and Berlioz, M. (2020). The Interest of an Evolution of Value Management Methodology in Complex Technical Projects for Improving Project Management. Procedia CIRP, 90, 411-415.

Lin, G., Shen, G. Q., Sun, M., & Kelly, J. (2011). Identification of Key Performance Indicators for Measuring the Performance of Value Management Studies in Construction. *Journal of Construction Engineering and Management*, 137(9), 698-706.

Luvara, V.G.M. and Mwemezi, B. (2017). Obstacles against Value Management Practice in Building Projects of Dures Salaam Tanzania. *International Journal of Construction Engineering and Management*, 6(1), 13-21.

Madushika, W. H. S., Perera, B. A. K. S., Ekanayake, B. J., & Shen, G. Q. P. (2020). Key Performance Indicators of Value Management in the Sri Lankan Construction Industry. *International Journal of Construction Management*, *20*(2), 157-168.

Mallett, B. (2017). The Role of Trust and Collaboration toward Innovation in Outsourced Manufacturing Supply Chains: *A Systematic Review*, Unpublished Thesis, University of Maryland University College.

Meng, X. (2012). The Effect of Relationship Management on Project Performance in Construction. *International Journal of Project Management*, 30(2), 188-198.

Mir, F.A. and Pinnington, A. (2014). Exploring the Value of Project Management: Linking Project Management Performance and Project Success, *International Journal of Project Management* 32(2), 202–217.

Naranjo-Valencia, J.C. and Jimenez-Jimenez, D. and Sanz-Valle, R. (2011). Innovation or Imitation? The Role of Organisational Culture. *Management Decision*, 49(1), 55-72.

Nguyen, H.L. and Watanabe, T. (2017). The Impact of Project Organizational Culture on the Performance of Construction Projects. *Sustainability*, 9(5).

Nnadi, E.O.E. and Ezemerihe, A. (2018). Value Management as an Efficient Risk Management Tool. *International Journal of Advanced and Multidisciplinary Engineering Science*, 2(1), 1-6.

Ochieng, E. G., Wynn, T. S., Zuofa, T., Ruan, X., Price, A. D. F., and Okafor C. (2014). Integration of Sustainability Principles into Construction Project Delivery. *Architectural Engineering Technology*, 3(1), 1–5.

Oke, A. E., Aghimien, D. O. and Olatunji, S. O. (2015). Implementation of Value Management as an Economic Sustainability Tool for Building Construction in Nigeria. *International Journal of Managing Value and Supply Chains*, 6(4), 55-64.

Oke, A.E. and Aghimien, D.O. (2018). Drivers of Value Management in the Nigerian Construction Industry. *Journal of Engineering Design and Technology,* 16(2), 270-284.

Olanipekun A.O., Albert, P.C.C., Xia, B. and Ameyaw, E.E. (2017). Indicators of Owner Commitment for Successful Delivery of Green Building Projects. *Journal of Ecological Indicators*, 72, 268-277.

Owoyemi, O.O. and Ekwoaba, J.O. (2014). Organisational Culture: A Tool for Management to Control, Motivate and Enhance Employees' Performance. *American Journal of Business and Management,* 3(3), 168-177.

Sabiua, B., Mohamad, S.F. and Mahmood, W.Y.B.W. (2019). Towards A Readiness Assessment Model for Value Management in Construction Industry, *IOP Conference Series Materials Science and Engineering*, 884(1), 1-20.

Shen, G.Q. and Yu, A.T.W. (2012). Value Management: Recent Developments and Way Forward, *Journal of Construction Innovation,* 12(3), 264-271.

Taghizadeh, H., Taheri, H. and Shokri, A. (2012). The Study of the Effective Organizational Factors in the Execution of Value Engineering. *International Journal of Innovation, Management and Technology,* 3(3), 202-205.

Tanko, B.L., Abdullah, F., Ramly, Z.M., Molwus, J.J. and Enegbuma, W.I. (2017). Modelling the Practice of Value Management in the Construction Industry, *3rd International Conference of Science, Engineering and Social Sciences Universti, Teknologi Malaysia,* 17-12, May, 11-14.

Tedla, T.B. (2016). The Impact of Organisational Culture on Corporate Performance. Unpublished Doctoral Thesis from Walden University.

Thneibat, M., Thneibat, M. and Al-Tamimi, B. (2021). Establishing the Synergy between the Perceptions of Construction Professionals and the Phases of Value Management. *Engineering, Construction and Architectural Management,* doi.org/10.1108/ECAM-11-2020-0987.

Tomelleri, S., Lusardi, R. and Artioli, G. (2015). The Metaphors of Collaboration, or the Social Construction of Collaborative Interactions between Health Professionals: *Acta Bio-Medica: Atenei Parmensis,* 86(1), 7-18.

Tony, M. and Tam, K.Y. (2013). Is Value Management Achieving Value For Money Without Compromising The Quality Requirements? 38th AUBEA Conference. At: University of Auckland

Qiang, G., Cao, D., Wu, G. and Zhao, X. (2021). Dynamics of Collaborative Networks for Green Building Projects: Case Study of Shanghai. *Journal of Management in Engineering,* 37(3).

Xiaoling Z, Wu Y, Shen L, Skitmore M (2013) A Prototype System Dynamic Model for Assessing the Sustainability of Construction Projects. *International Journal of Project Management,* 32, 66-76.

Yu, A.T.W., Javed, A.A., Lam, T.I., Shen, G.Q. and Sun, M. (2018). Integrating Value Management into Sustainable Construction Projects in Hong Kong. *Engineering, Construction and Architectural Management,* 25(11), 1475-1500.