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Strategies for Sustaining the Optimised Risk Management Maturity Level by Highway Contractors in Nigeria

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The attainment of high risk management maturity (RMM) enables effective management of project risks, better utilisation of resources and certainty in project outcome. Though several RMM models have defined maturity levels with corresponding capability attributes for each maturity level, however, there is a lack of clear strategies for highway contractors to attain higher levels of RMM. The methodology involved review of existing literature and semi-structured interviews with project and risk managers in selected construction firms. A variant of purposeful sampling, maximal variation sampling technique was used to draw samples for the qualitative data. Conceptual content analysis technique was used to analyse the transcribed data. The study revealed that the barriers for attaining higher RMM could be overcome by adoption of formal risk management (RM) practices, implementation of organisation-wide policy on RM and engagement of professional staff competent in technical/management aspect of highway construction amongst others. The study found that maintaining strong financial base with continued investment in human, technical and risk management resources coupled with sustained quality control in procurement process, strategic political goodwill, satisfying client's political expediency and excellent relationship management are amongst the strategies for sustaining the ultimate level in the maturity conundrum. Adoption of these strategies will ultimately lead to better project delivery and more efficient utilisation of resources in the construction industry eventually leading to competitive advantage amongst competitors, risk modelling, opportunity optimisation and increased management accountability for the highway contractors.

Keywords: contractors, highway, Nigeria, risk, strategy.

Introduction

The economic development and prosperity of any nation is partly dependent on its highway infrastructure as it enhances local economic productivity, efficiency of domestic trades and increase volume and speed of inter-regional migration (Antoniou *et al*., 2012; Kim & Hun, 2016). In view of the importance of highway projects and their very high risk exposure, it is of utmost significance to determine the risk management maturity (RMM) of contractors prior to their selection for proposed new or rehabilitation projects (Le *et al*., 2009; Salawu & Abdullah, 2015). Bashir and Ibrahim (2020) identified barriers to be overcome and enablers towards attaining higher RMM. Highway contractors determined to improve their weak areas have strategic courses of action to execute in order to achieve better risk management processes for enhanced project delivery and profitability. In order to gain maximum benefits of profitability and efficient use of resources from construction projects, organisations need to strategize and attain high level of risk management maturity (Mu *et al*., 2014; Zhao *et al*., 2013).

Construction organisations that attain the optimised risk management maturity level are at a competitive advantage over others in terms of derivation of benefits offered by formal risk management practice. This is in view of the huge resources, experiences, acquired skills and competence of their technical and managerial staff in project risk management knowledge

areas. Potential risks in future projects are evaluated with ease and a decision on the viability or otherwise of proposed projects are established even before commencement and sign-off. This desired level of success and competitive advantage can only be maintained and harnessed by organisations willing to adopt certain strategies borne out of a careful analysis of the internal strengths and weaknesses, external threats and opportunities prevalent in the industry.

Bashir and Ibrahim (2020) developed the means of overcoming identified factors responsible for present "novice" level of risk management maturity of highway Contractors; identified enablers for attaining higher RMM level and presented some strategies for progressing between the various RMM levels to the optimised level. This paper is aimed at developing the strategies to be adopted by highway contractors to sustain the optimised RMM level detailing actions to be performed, by whom, for which organisational unit, why the output and the means of executing the action(s). The attainment and sustenance of the optimised RMM level by highway contractors will lead to better utilisation of resources, improved control on projects, reduced earnings volatility and ultimately provide competitive advantage in the delivery of highway projects.

Literature Review

In the determination of effective strategies for corporate organisations, Huff *et al*. (2009) emphasized five principal concepts that need to be considered. First, the organisation needs to communicate a compelling vision to all staff and external stakeholders for an understanding of what it stands for. Secondly, there's need to establish a strong nexus between the organisation's internal strengths and the external opportunities in the market place. Thirdly, the company must generate more resources than required. Fourthly, a sensible co-ordination of the organisation's activities and geared towards achievement of success. Finally, the organisation must be prepared and respond to changing conditions in the external business environment.

An organisation's strategic position is the impact of the mix of its resources and competencies, external environment and the expectations and influences of stakeholders (Johnson *et al.*, 2005). The optimised RMM level has been otherwise described differently as natural, managed and expert (Hillson, 1997; RMRDPC, 2002; Zou *et al*., 2010). At the optimised RMM level, risk information is used to improve organisational processes, proactive decision making and gain competitive advantage over firms within the same business environment (PMI, 2008). Risk management culture and attitude become so embedded into organisational processes that RM knowledge base is established and used for risks and opportunity optimisation (Zou *et al*., 2010). Organisations seeking to sustain the strategic optimised RMM level must continually improve on their risk management processes, ensure commitment of the top management and invest in risk management resources (Mu *et al*., 2014). Another major influence on this strategic position is the expectation and purpose from multiple stakeholders across different levels of the organisation. Human nature necessitates varying expectations. As such, it is the responsibility of top management to establish congruence in expectation and purpose for which the organisation is working towards else attainment of the organisation's strategic position will be impeded (Pidun, 2019).

McCabe (2010) opined that while there are no definite recipes for guaranteed success in corporate strategy, a number of tests can be used to determine the appropriateness and likelihood of success of proposed strategies to be formulated. From a practice-oriented perspective, Lynch (2006) identified value addition, consistency and competitive advantage as necessary tests that a proposed strategy must pass to sustain the optimised RMM level.

McCabe (2010) suggested that in developing corporate strategies, considerations need to be accorded to two main issues. First, the existing and likely future needs of customers and potential consumers of the organisation's products. Secondly, the optimal utilisation of existing resources or where necessary and possible seek alternative resources. McCabe (2010) citing Ansoff (1987) identified four choices in developing strategic options as

market penetration, product development, market development and diversification. Highway contractors desirous of attaining higher RMM capability and maturity must choose a multiple or all amongst these options in developing their strategic position for competitive advantage in the construction industry.

Methodology

This paper is the concluding part of a broader study that developed strategies for attaining and sustaining optimised risk management maturity (RMM) by highway contractors in Nigeria. The study involved use of explanatory sequential design that consisted of first quantitative data collection using 5-point Likert scale questionnaires to determine the level of implementation of factors influencing RMM of highway contractors. This study adopted the explanatory sequential design which consists of collecting quantitative data initially and then qualitative data based on the quantitative results for further elaboration and understanding of the quantitative results. This design is premised on the understanding that the quantitative data give a general picture of the situation. The successive qualitative approach is required to refine and explain further the general scenario (Creswell, 2012).

Based on the identified risk management maturity criteria from literature, fifty-five RMM factors were synthesized and adopted as the basis for the questionnaire survey. The population of the study comprised of all highway contractors involved in the provision of road infrastructure in the seven North-western states and the FCT which stood at 1469 (CAC, 2017). Stratified sampling was adopted in the questionnaire survey where each state was regarded as a stratum from which samples were drawn. Fellows and Liu (2015) described stratified sampling as establishing your population in strata and taking samples from each stratum based on purposive sampling. This is to provide adequate representation of the population by using the proportions of the samples as prevalent in each State.

Using the findings from the questionnaire survey as input and a basis for the selection of six contractors, a multiple case study qualitative approach was adopted with two groupings of three contractors each based on their established RMM levels from the questionnaire responses. A variant of purposeful sampling, maximal variation sampling technique was used to select three project/risk managers from the 'novice' level and the other three from 'managed/optimised' level for interview. The maximal variation sampling was chosen to understand and present multiple perspectives of individuals to crucial issues in the attainment of higher risk management maturity. This is to determine the means of overcoming the barriers for the present maturity level and also the enablers for higher RMM.

Conceptual content analysis technique was used to analyse the transcribed interview data. Of the six firms, three are medium sized while the others are big sized. Medium sized companies were classified with 51 – 100 permanent employees, average project value of N200million – N500million (USD 550,000 – 1,300,000) and average annual turnover of N500million – N1billion (USD 1.3million – 2.6million). A big sized company has more than 100 permanent employees, average project value of over N500million (USD 1.3million) and average annual turnover above N1billion (USD 2.6million) based on Federal Ministry of Works and Housing, Abuja classification.

Results and Analysis

Respondents' Demograhics

The first section of the questionnaire (Section A) requested for general information of the respondents which comprises name of organisation; position of respondent; years of experience; nature of the firm's ownership; number of permanent employees; average project value and average annual turnover. The highest category with seventy-six is senior staff whom are Engineers, Project Managers or Quantity Surveyors representing 71.7%. Principal staff are twenty in number representing 18.9%, and directors are eight representing 7.5%. Junior staff is the least category having two respondents representing 1.9%. Most of the respondents were at least from the senior staff level. The very high percentage of respondents at least at the senior level suggested that the level at which data was obtained is rich and meaningful for the study.

Strategies for Attaining Higher Risk Management Maturity

The naïve risk management maturity level is characterised by firms' unawareness of the need and benefits of risk management. The company does not identify any risk before commencement of projects and neither is there any proactive and structured means of dealing with risk issues when they occur. A company at the naïve risk management maturity does not have any formal or structured risk management process in place. Therefore, to progress from naïve to novice level of risk management maturity, the study identified as shown in Table 1 a series of actions that must be done by a combination of the board, top management, senior and project management units principally to provide an understanding of the benefits of risk management to the overall goals and visions of the organisation. These actions are performed through seminars, workshops, documentation of lessons learnt and procurement of risk management resources, software, tools and equipment amongst others.

At the novice RMM level, the organisation is not only aware of risk management and its potential benefits it is practiced largely informally. Some aspects of formal risk management, which include risk identification, analysis and response are practiced to some extent. Risks are managed generally on the basis of experiences and lessons learnt from past projects. The study has revealed that, to progress to the managed level, management must develop and implement an organisation wide RM policy for the benefit of standardisation and development of a RM culture and attitude mitigating unnecessary losses of resources. Periodic training in RM, project planning, departmental meetings and literary bulletins provide avenues for such benefits.

The highest level of risk management maturity attainable is the optimised level. Besides formal risk management practice, risk management culture is embedded in each unit and sub-units of the organisation. The risk management culture and attitude of an organisation at the optimum level is so high that risk management knowledge is used essentially to gain competitive advantage over contemporaries within the same sector and market segment. Therefore, to ascend to the optimised level, most of the action is required by top management of the organisation via generation of more internal resources, periodic monitoring and review of documented RM knowledge for analysis, comparison and future planning. Threshold for risk acceptance and response strategies are put in place through effective communication across organisational units. The heads of project management teams shall extensively utilise project management techniques such as Value Engineering (VE), Value Analysis (VA), Environmental and Social Impact Assessment (ESIA) to further elucidate potential risks and opportunities in proposed projects for appropriate response mechanisms put in place. At the optimised level, risks considerations are inherently contained in routine business activities of the organisation at all levels.

Table 1: Strategies for Progressing from Naive to Optimised RMM

RMM Level Progression	Action to perform	By Whom	For Whom	Reason for the Action	How to execute Action
Naïve to Novice	i. Clear definition of the organisation's goals and vision which is effectively communicated to every staff	Board of the Company	Top management	To strive towards the attainment of the vision, goals and corporate objectives	Provision of a policy document
	ii. Embrace the need for RM practice within the organisation	Top management	Top/senior management	To understand the benefits to be derived from RM processes and justify commitment of resources	Seminars and workshops by PRM personnel/organisations
	iii. Initiate and observe RM practice at least informally	Project management	Senior management	To monitor risk events and the lessons to be learnt when they occur	Documentation of lessons learnt & experiences
	iv. Identify key technical personnel and evaluate their competencies	Senior Management	Staff in Engineering & Project management	Full comprehension of the meaning, requirements and benefit of RM	Tests in Engineering/Project management knowledge areas; then training
	v. Procurement of project risk management resources	Top Management	Senior management & Project management	Enhancement of technical competence, PRM knowledge and mitigation of risks	Procure RM softwares, books, equipment.
	vi. Determine the strengths and weaknesses of internal organisational resources	Senior management	All human & machinery	To determine internal capacity with respect to external resource requirements	SWOT analysis technique
Novice to Managed	i. Develop a RM policy tailored to the company's vision, objectives & context	Top management	Boards' approval	To guide company activities towards attaining its vision and objectives	Collaboration with senior management to develop the RM policy
	ii. Approve the RM policy of the company developed by management.	Board	Top and senior management	Standardisation of the organisation's RM policy	Review drafted policy and adopt at board meeting of directors
	iii. Implementation of organisation wide communication and effective co-ordinated practice of a standardised RM plan	Senior management	All staff	To develop RM culture and attitude and mitigate unnecessary loss of organisation's resources	Periodic departmental & project team meetings, bulletins and pamphlets
	iv. Employ professional staff competent in technical and management aspects of highway projects	Top management	Project Management/ Engineering departments	To achieve formal PRM practices in all departments	Periodic training in PRM & engineering skills of highway construction
	v. Document lessons learnt on executed projects and share knowledge with senior management	Project management	Senior management	For development and application of a standardised RM process of future projects	Use of risk registers & results of risk monitoring and control
	vi. Study project documents and carry out site visits/ investigations	Project management	Senior management	To ensure accuracy and completeness of project working documents provided.	Site visits/investigations; checks on BOQs, drawings & contract conditions
	vii. Prepare a detailed project execution plan (PEP)	Project management	Senior management	Produce a document to guide the execution of the project based on its specifics	Project planning, program of work, method statement, procurement plan, milestone delivery dates, payment and cash flow schedule.
	viii. Consistent and systematic identification, analysis and response to risks throughout the project lifecycle.	Project management	Senior management	New and emerging risks shall be dealt with timely and proactively.	Standard implementation of RM process and reiteration of residual risks
Managed to optimised	i. Generate more internal resources and establish a nexus between organisation's strengths and the external market opportunities in the highway construction sector	Top management	Senior management	To capture more projects for the organisation and creation of market niche	Harnessing human & materials resources of all departments
	ii. Create risk awareness and promote RM culture and attitude	Senior management	All staff	To embed organisation wide practice of RM in all staff of the organisation	Provision of RM resources, consistent training and emphasis on decision making to be in conformity with the organisation's RM policy

	iii. Periodically monitor the implementation of the RM processes of all units against the RM plan.	Top management	Senior & project management	To review the RM framework, policy and plans based on the results obtained from the monitoring and review process	Evaluation of results of RM against established RM plan.
	iv. Examine documented RM knowledge of past projects, analyse and compare actual results against original plan	Top management	Senior & project management	To evaluate the accuracy of existing RM plan and forecasting likely RM plan of future projects.	Analyse and compare actual results against established
	v. Extensively utilise project management techniques in the delivery process	Project management	Senior management	To elucidate potential risks and opportunities in proposed projects for decisions on viability & response mechanisms put in place	such as value engineering (VE), value analysis (VA), environmental and social impact assessment (ESIA)
	vi. Make a formal and clear definition of the firm's risk appetite and tolerance level in line with the corporate strategy	Top management	Senior & project management	To establish thresholds for appropriate risks acceptance & response strategies to be put in place	Effective communication through departmental meetings and bulletins
	vii. Establishment a separate RM department, or a management committee or a dedicated senior executive that will take charge of risk oversight	Top management	Senior management	To provide effective internal feedback on the company's RM processes in place	Liaison/oversight by the assigned officer with RM personnel in the field of operation

Strategies for Sustaining the Optimised RMM Level

The attainment of the optimised risk management maturity level by construction organisations offers a competitive advantage over other firms in terms of derivation of benefits offered by formal risk management practice. This is further influenced by the huge resources, experiences, acquired skills and competence of their technical and managerial staff in project risk management knowledge areas. Potential risks in future projects are evaluated with ease and a decision on the viability or otherwise of proposed projects are established even before commencement and sign-off.

Sustaining this level of success and competitive advantage can only be maintained through the adoption of certain strategies borne out of a careful analysis of the internal strengths and weaknesses, external threats and opportunities in the business environment. Table 2 shows suggested strategies for highway contractors to maintain the optimised risk management maturity level. The strategies will start with the board providing sufficient resources to respond to 'new conditions' such as change in existing markets or the evolution of new markets consistent with present or future capabilities.

Heads of various project teams shall prepare and ensure strict adherence to a standard operation manual (SOP) and risk management plan by all team members to enhance health and safety standards on site, timely project delivery and high-quality products. Senior and top management levels of the organisation should ensure consistent and discrete implementation of the requisite action plans as detailed in Table 3 while the board of the company in liaison with top management provides all necessary internal and external requirements for attaining the corporate goal.

Table 2: Strategies for Sustaining the Optimised RMM Level

RMM Level	Action to perform	By Whom	For Whom	Reasons for the Action	How to execute Action
Sustaining the Optimised level	i. Ensure the provision of sufficient resources in all aspects of the organisation	Board	Top management	to respond to 'new conditions' such as change in existing markets or the evolution of new markets consistent with present or future capabilities	Responding to the needs of Top and senior management
	ii. Ensure strict adherence to the firm's standard operations manual (SOP) and standard RM plan	Project management	Technical and management team members	To enhance the health and safety standards on site, timely project delivery and high-quality products	All activities to be executed in accordance with the SOP manual and RM plan
	iii. Ensure continuous improvement in human and other resources through regular training	Top management	All departments	To obtain the highest quality output and products	Use of latest technology and equipment in work processes
	iv. The board in liaison with the management shall maintain strong financial base with continuous investment in human, machines and risk management resources	Board	Top management	To maintain the established reputation of highest quality standards and products of the firm	Healthy financial standing and high credit worthiness with the firm's bankers
	v. Ensure sustained quality control in the procurement processes	Senior management	Project management	To inspire confidence in clients and ease of achieving project objectives	proactive work ethics and inspire confidence in clients' through prioritisation of client's project objectives
	vi. Be responsive to commencement of projects at short notice	Top management	Senior & project management	To satisfy client's political expediency and ensure that project managers execute works in compliance with instructions of the supervising team	Compliance with supervising team's instructions
	vii. Retain successful project team members and an internal feedback mechanism	Senior management	Project management	To improve performance standards and address other key issues of concern for future projects	Enhanced remuneration, performance bonus & confidentiality of feedbacks
	viii. Progressively build and maintain strategic political goodwill and excellent relationship management with all project stakeholders.	Top management	Clients/stakeholders	To keep the image of the firm in the front row amongst other competing companies in the highway construction sector	Maintaining lobbyist, corporate social responsibility projects, donations & humanitarian projects
	ix. Continuous commitment to risk management processes which must remain uninterrupted by changes in the board or management of the organisation	Top management	All departments	To consolidate market position and excellence in business processes of the organisation	Be up to date in all spheres of RM resources, training & latest processes

Discussion

Highway contractors at the naïve RMM level aspiring to attain the optimised RMM level need to perform distinct action plans as detailed above by different units of the organisation for the benefit of other units. It starts with a clear definition of the goals and vision of the company by the board which is effectively communicated to all staff by the top management. This is one of five concepts of effective strategy as proffered by Huff *et al*. (2009). The top management will have to embrace the need for risk management through organising workshops/seminars for a full understanding of its benefit and further activate project and senior management to initiate and observe RM practice at least informally. This is in consonance with the requirements of RMRDPC (2002) and Mu *et al*. (2014). Execution of these action plans and achievement of the desired results will progress a firm to attain the novice RMM level.

The study found that for firms to progress to the higher managed level of RMM, actions are initiated by the top management's formulation of a risk management plan which is tailored towards the organisation's vision, objectives and context. As part of the RM plan, risks will be consistently and systematically identified, analysed and response techniques put in place throughout the project life cycle. These actions are consistent with the positions of Mu *et al.* (2014) and Zhao *et al.* (2015) in their determination of RMM factors. In line with McCabe (2010)'s proposition of planning and communicating as essential steps in implementing strategy, the senior management will further implement an organisation wide communication and effective co-ordinated practice of the approved standardised RM plan of the organisation.

Based on the adopted maturity levels in this study, the topmost level in the maturity conundrum is the optimised level. Attaining this level by highway contractors have added benefits of competitive advantage amongst competitors, increased management accountability and improved control of an organisation on its projects. RMRDPC (2002) opined that at the optimised level, risk management knowledge base is used for modelling risk and opportunity optimisation. Requisite strategies for highway firms to reach the optimised level starts with the top management's formal and clear definition of the firm's risk appetite and tolerance level in line with the corporate strategy. The implementation of risk management processes against the firm's RM plan of all the various units will be periodically monitored by the top management for a review of the RM framework, policy and plans based on actual results obtained (where necessary). The senior management will further create risk awareness and promote RM culture and attitude across all levels with the singular aim of embedding an organisation wide practice of RM in all staff. These three (3) principal actions of the top and senior management are supported by the suggestions of Zhao *et al.* (2013) and Zou *et al*. (2010). Consistent with the recommendation of Huff *et al*. (2009), the top management will need to generate more internal resources and establish a nexus between organisational strength and external market opportunities in the highway sector. This will bring about market penetration and the creation of a niche for the organisation which is an important strategic option for corporate success (McCabe, 2010).

Beyond reaching the topmost optimised level of RMM, highway contractors have the onerous task of sustaining this level for continued business prosperity and excellence in organisational risk management. Action plans at this level are largely for top and senior management because the organisation has already embedded risk management culture and attitude in its processes. The top management must as a matter of policy ensure continuous commitment to RM practice by all departments which must remain unimpeded even in the event of changes in the board and other top management positions. Human and other

resources must be continually improved as well. These two principal action plans were equally advocated by previous studies to provide a platform for diversification as a growth strategy and sustained leading market position (Huff *et al*., 2009; Zhao *et al*., 2013; Zou *et al*., 2010).

Being a stage where tactical dominance and market leadership are amongst priority objectives, the top management must be responsive to commencement of projects at short notice from 'blue collar' clients. The firm shall progressively build and maintain strategic political goodwill and excellent relationship management with all project stakeholders. These actions will be best executed by top management and other board members with high esteem. With major clients of highway projects being Governments at both Federal and States levels, there is a compelling urge for the satisfaction of client's political expediency and putting the image of the company in the front row in terms of capacity, prompt delivery and guaranteed quality of end products. Strong contacts with lobbyists at the corridors of power may be utilised in making a business case for the company in some instances.

Conclusion and Recommendations

The overall study was aimed at developing strategies for attaining and sustaining optimised risk management maturity by highway contractors in Nigeria based on clearly defined objectives which have been achieved. The study is concluded as follows; highway contractors must implement clearly defined strategies in order to progress along the risk management maturity continuum to attain higher RMM levels and also sustain the optimised level when attained. The study recommends that in the implementation of the strategies for attaining higher risk management maturity levels, appropriate concern must be given to the dynamics of the construction industry in terms of multiplicity of stakeholders, project complexity and clients' political expediency. The imperfections of the industry, people and other stakeholder organisations' means no 'hard and fast rule' to strategy formulation. Highway contractors must be mindful of the multiple outcomes to satisfy both internal and external stakeholders.

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