INTANGIBLE ORGANISATIONAL RESOURCES AND PERFORMANCE OF ROAD CONSTRUCTION COMPANIES IN NYERI COUNTY, KENYA

Jacinta Wairimu Mwangi.
MBA Candidate, Department of Business Administration, Kenyatta University, Kenya.
Dr. Paul Waithaka.
Lecturer, Department of Business Administration, Kenyatta University, Kenya.

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ABSTRACT

The number and severity of stalled projects in the Kenyan public sector have been on the rise. Inadequacy and poor state of resources has been cited as the key challenge responsible for delays or complete stall of projects. While theorists argue that the success of construction companies is largely pegged on their ability to ensure availability and efficient management of resources, empirical evidence to demonstrate this is still scanty. The current study focused on intangible organisational resources and performance of road construction companies in Nyeri County of Kenya. The study was anchored on the resource based view of the firm and the dynamic capabilities theory as the main guiding theoretical frameworks to the study. The target population was made up of 58 road construction companies in Nyeri County. A census approach was used to subject all the 58 road construction companies to the study. The study purposively targeted the project managers and project engineers working for the road construction companies. This procedure led to a total of 116 respondents targeted. Primary data was collected through a semi structured questionnaire. The study collected secondary data from the management reports of the road construction companies and through a review of other corporate handbooks. Both descriptive and inferential statistics were used in the analysis. The multiple regression analysis output provides evidence that intangible resources is a useful and positive determinant of performance of road construction firms. The Pearson correlation analysis showed that intangible organisational resources has a positive and statistically significant relationship with performance of road construction companies. Although the road construction companies enjoyed a rich endowment with intangible resources, there was need to further cultivate strategic partnerships with suppliers to enjoy enhanced preferential treatment in accessing materials and other services and facilities. Other ways to enhance intangible resources include involvement in corporate social responsibility and pursuit of a culture of creativity and innovation.

Key Words: Organisational Resources, Intangible Organisational Resources, Organisational Performance, Road Construction Companies

INTRODUCTION

According to Peltokorpi, Seppänen, Lehtovaara, Pikas, and Alhava (2021), construction plays a crucial role in the global economic transformation and growth. There are investments worth trillions of dollars in the world focused on construction. All over the world, the construction industry is acknowledged as one of the industries of strategic economic importance. This is primarily because of the significant role that infrastructure plays in supporting other sectors in the economies. In china, Demurger (2001) provides evidence to demonstrate that infrastructural

development plays a critical role in influencing the level of economic growth which underlines the significance of the sector to the economy. In Europe, it is estimated that the construction industry contributes a significant 9 percent of the region's Gross Domestic Product. In the same context, the importance of the road infrastructure is highlighted on its role in enhancing the economic activities of both small scale and large scale entrepreneurs (Banerjee, Duflo, & Qian, 2012).

From a global view point, according to Horta, Camanho, Johnes and Johnes (2013), the general performance of the construction companies is variant across the continent of the world. In particular, North American construction companies have continued to post much superior performance compared to firms in the whole of Europe and Asia. The construction companies are listed as one of the most underperforming in terms of cost overruns, schedule overruns and standards inefficiencies (Mwelu et al., 2021). Roughly a third of road construction projects pursued by the construction companies either stall, underperform, or face budget and time shortcomings (KPMG, 2020).

Construction companies have therefore continued to struggle with the challenge of poor performance. A study by MC Kinsey (2019) established that the large projects in construction industry such as road construction projects typically witness up to 20 percent schedule overruns as well as 80 percent in budget overruns. This generally indicates a condition of poor performance of road construction companies. Resource constraint in the companies is listed top of the reasons why projects underperform or fail. Other reasons cited include inaccuracy in project estimates and scope, errors in project design, administrative errors, and unforeseen project changes and poor communication.

Regionally, Lorimer (2019) asserts that the question is no longer whether infrastructure contributes to Africa's development but how it contributes. This position is further supported with an emphasis on the road infrastructure as the focal point of Africa's economic boom. The road infrastructure sector is further important for its stand in supporting the activities in other key sectors of regional economy such as tourism, agriculture and manufacturing (Mohsenijam et al., 2020).

The African construction industry has also been declining over the past one decade with many companies either closing down or diversifying into other field in order to remain relevant. According to Dublin (2021), in South Africa, the past one decade has seen multiple construction companies report declining performance. The South African construction industry aggregative decline over the period 2015 to 2020 is estimated at approximately 46.8 percent. Many construction firms in South Africa have had to move out of business or downscale their capacities. Some of the most affected South African construction companies in recent times and which have reported remarkable performance distress include Basil Read, Esor Construction and Group Five. In the Kenyan context, the performance of road construction companies has been wanting especially as regards cost, scope and time or schedule inefficiencies. Ochieng, Egbu, Price, and

Ruan (2013) assert that the number and severity of stalled projects in Kenya has been on the rise. Nyangilo (2012) further observes that over 70 percent of the projects are likely to attract schedule delays of over 50 percent. As regards costs, over 50 percent of the projects are likely to escalate in cost with a magnitude of over 20 percent.

More recent studies present a similar situation. In an appraisal of construction projects in Kenya between the year 1963 to 2018, Ong`ondo and Masu (2019) establishes a dire condition of poor performance of road construction companies. Poor construction companies' performance has persisted over five decades epitomizing a rather chronic situation that necessitates heightened attention and remedies. The report reveals that between 35 and 60% of construction projects initiated in Kenya reported budgetary overruns. In addition, between 35 percent and 73 percent of road construction projects faced time overruns.

The report by Ong`ondo and Masu (2019) indicate largest chunk of road construction projects in Kenya fail in all dimensions of performance including time (schedule), cost (budget) and standards (quality) indicators. The worst performing dimension is failure to meet the initially set targets of time that occasion project delays. Project delays not only aggravate the process of development, but also come with negative cost implications to the promoters and society as a whole.

The poor performance of the construction industry and by far the construction companies has been an issue of concern, given its relative importance to the economy. The Kenya National Bureau of Statistics (2020) identifies the construction sector as a key driver of Kenya's economic growth over the last five years. The construction industry contributes on average 5 to 7 percent of the gross domestic product (GDP). Investment in road infrastructural investment is highlighted as key to turning the fortunes of economic growth in Kenya (Mugambi, 2010). This explains why the Government of Kenya has scaled up on road construction projects as a strategy to spur economic growth in line with Vision 2030 economic blueprint.

Performance refers to the extent to which an organisation is able to meet or fulfil its objectives (Raffoni, Visani, Bartolini, & Silvi, 2018). Performance can be assessed using financial measures as well as non-financial measures. The similarity is that both financial and non-financial metrics aim at evaluating the accomplishment of business objectives. However, financial metrics rely on monetary indicators in reporting the state of business performance while the non-financial metrics do not emphasize on monetary metrics but other factors that are much more long term (Armstrong, 2021). The performance of road construction companies cannot be assessed without reference to the projects undertaken by those companies. The assessment of performance of construction companies would be incomplete without an assessment of the project cost, time and quality management of the construction projects undertaken (Gyadu, Danso, & Asubonteng, 2013).

Armstrong (2021) argues that any particular project involves diverse groups of stakeholders which makes the measurement of its success more complicated. For the construction industry, the different stakeholder groups for road construction projects would include the sponsors, regulators, government, management and the general public. It is worth noting that each of the stakeholders have different goals and objectives which affects their individual assessment of project outcomes. According to Helmold and Samara (2019), a prudent project performance measurement procedure seeks to determine the impact of the project at a point in time, or over a fixed timeframe. This is particularly since projects by their very definition have a definite start point and an end point.

There are therefore several project performance indicators also called Key Performance Indicators (KPIS) that can tell you whether the project is going towards the desired direction or not. One of the KPIs as developed by Helmold and Samara (2019) is direct Impact which is essentially the magnitude of the difference between the level of performance before the project's start time, and the level after the project's end time. The other indicator is the bottom line impact which covers the financial impact, like costs saved or income generated. The other KPIs are on-time and on-budget measures which are interested with schedule compliance and budgetary compliance aspects. Finally, stakeholder support and engagement is another considered KPI where stakeholder perception of value is considered as well as their level of participation in the project undertakings (Brandon, 2010).

Armstrong (2021) notes that project managers and other interested stakeholders have also used the Balance Score Card as a measure of performance. The Balance Score Card (BSC) is a strategic planning and management system tool that finds wide application in both profit and non-profit making organizations worldwide (Ying, Tookey, & Seadon, 2018). BSC is established on the need to align business activities with the overall corporate goal as well as organisation's vision and strategy. It also seeks to advance internal and external communications besides monitoring the project performance against firm or project's strategic goals (Nørreklit, Kure, & Trenca, 2018). The framework makes a key contribution to firm or project performance measurement by adding strategic non-financial performance measures to traditional financial metrics. The expanded framework of indicators in the Balance Score Card serves to give managers and executives a more balanced view of organizational performance (Hasan & Chyi, 2017).

The triple constraint methodology is another popular and generally accepted method of measuring performance of a project undertaking (Wyngaard et al., 2012). The Triple Constraint concept represents three key aspects of determining project success namely the quality (scope), cost (resources) and schedule (time). Josiah (2019) notes that the three elements of a project that is; quality cost and schedule work in tandem with one another. The model has attracted critics and supporters alike although supporters seem to outdo the opponents. Abyad (2018) presents the triple constraints as a triple illusion arguing that the concept is not only wrong but also less useful. The three dimensions of performance represented in the triple constraint model has however been

considered adequate by most past researchers, authors, theorists and practitioners as a valid instrument to assess project performance (Nørreklit, Kure, & Trenca, 2018). They criticise opponents of the model arguing that the model's coverage is more than enough to indicate success of projects, programs and organisation. The study at hand utilised the triple constraint methodology for its objective focus of performance of road construction companies.

Within the construction industry, there are a variety of different types of resources that need to be taken into account during any project. These include materials, finance, machines, manpower, and space. The ability of the project manager to successfully handle these resources will contribute largely to the success of the overall project. According to Al-Ghattas and Marjanovic (2021), organizational resources are in essence all assets that are available to a firm for use in pursuit of their investment objectives and ultimately competitive advantage over rivals. The resources include intangible resources, tangible or physical resources, human resources and financial resources. As a key facet of strategic management, resource management involves efficient and effective development of an organization's resources when required (Wheelen & Hunger, 2011).

Freeman (2010) underscores the importance of intangible resources. These are essentially assets that are not physical in nature. The main intangible assets for a company would include corporate intellectual property, including items such as patents, trademarks, copyrights and business methodologies. In addition goodwill and brand recognition would also be categorised as intangible assets. Intangible resources are not used in the service provision for construction firms but are essential to the continued operation of a company (Cohen, 2011). The difference between the price that can be paid for a company and the value of its tangible resources represents the value of the company's intangible assets which include patents, goodwill, brand names, customer loyalty and copyrights (Jancenelle, 2021). The current study will consider intangible resources and financial resources in the analysis.

Statement of the Problem

The Government of Kenya has been investing heavily in road construction as an efficient infrastructure system is appreciated as a key pillar of the Vision 2030 economic transformation plan. Roads are classified as enablers in the achievement of Vision 2030. The Kenya National Bureau of Statistics (2020) further documents that government spending on road infrastructure has grown more than 15 times, from Ksh 10 billion in 2003 to Sh154 billion in 2019. Nevertheless, the performance of road construction companies has been wanting especially as regards cost, scope and time or schedule inefficiencies.

According to the Office of the Auditor General (2019), many road construction companies failed to deliver the assigned projects within the pre-set standards, schedule and budget. Otulia, Mbeche, Wainaina and Njihia (2017) studied organizational resources and performance of ISO certified

organizations based in Kenya. The study concluded that the intangible resources have a negative effect on performance. Empirical gaps exits as the study contradicts existing literature such as Walter and Vincent (2018) which suggested that intangible resources positively influences the performance of firms.

Njagi, Muathe and Muchemi (2018) studied intangible resources and their effect on performance. The researcher concluded that intangible resources have a strong relationship with performance. Gakenia (2015) studied the effect of organizational resources on performance of mobile phone companies in Kenya. Intangible resources were found to have a positive influence on performance. Conceptual gaps emerge as the studies relied on a narrow conceptual representation of intangible resources in their assessment. As such, to address the problem of underperformance of road construction companies, the current study assessed the effect of intangible organisational resources on performance of road construction firms in Nyeri County, Kenya.

Objective of the study

The objective of this study was to determine the effect of intangible organisational resources on performance of construction companies in Nyeri County, Kenya.

Research Question

Do intangible organisational resources have an effect on performance of road construction companies in Nyeri County, Kenya?

LITERATURE REVIEW

The part is broadly divided into theoretical and empirical review. The theories include the resource based view of the firm and the dynamic capabilities theory. The theoretical review considers materials and schools of thought regarding the subject matter.

Resource Based Theory

The Resource Based Theory was initially developed by Penrose (1959) as a managerial framework suitable in establishing key strategic resources that a firm can exploit to achieve sustainable competitive advantage. The theory has been promoted widely by Barney (2001) as a tool for gaining competitive advantage. Also known as the Resource Based View (RBV) of the firm, the resource based theory is grounded on the key principle that the basis of the firm’s competitive advantage is their internal resources and not their positioning in the external environment. The RBV framework explains that firms are heterogeneous because they possess heterogeneous resources (Barney & Clark, 2007). The theory draws managerial attention on the firm's internal

resources in an effort to identify those resources; assets, capabilities and competencies with the potential to deliver superior competitive advantage. Therefore, the firm's competitive advantage depends on the unique resources and capabilities that a firm possesses and not simply on the evaluation of environmental opportunities and threats in conducting the business (Barney et al., 2001).

The RBV theory visualises that certain types of resources owned and controlled by firms have the potential not only to generate competitive advantage but also assure superior firm performance. Therefore, the theorists posit that the fundamental sources and drivers of the firms' competitive advantage and superior performance are mainly associated with the nature and attributes of the firm's resources and capabilities which are valuable and hard to imitate (Peteraf & Bergen, 2003). The resources are classified into two broad categories namely; tangible and intangible resources. Generally, the resources include firm's assets, firm attributes, information, capabilities, organizational processes and knowledge. The resource based theory was useful in guiding the evaluation of the effect of intangible resources on firm performance. The theory primarily suggests, that the unique resources at the firm's disposal contribute significantly to organisational and performance. As put by Lockett, Thompson, and Morgenstern (2009), no matter how good the strategies may be, if the firm lacks necessary resources to enable their successful implementation, they remain in the planning phase.

Dynamic Capabilities Theory

The theory was developed by Teece, Pisano and Shuen (1997) and was fundamentally premised on the argument that in order to sustain performance in an environment characterized by hyper competition, firms should constantly reconfigure their internal resources and capabilities to assume corporate responsibility for adapting the turbulent environment. Zahra, Sapienza, and Davidsson (2006) explains that dynamic capabilities involves firm's strategy to constantly create, integrate, reconfigure, renew, and recreate both internal and external resources in reaction to dynamic and rapidly shifting market environments as it seeks to attain and sustain competitive advantage. Thus competitive advantage is not brought about by blanket availability of resources, but the ability to constantly update such resources to address organizational needs.

By constantly developing and improving their dynamic capabilities, firms avoid developing core rigidities, which constrain development, generate sluggishness and choke innovation (Ambrosini et al., 2009). The dynamic capabilities theory emerged as both an extension to and a reaction against the inability of the resource-based view (RBV) to interpret the development and redevelopment of resources and capabilities to address rapidly changing environments. Eisenhardt and Martin (2000) argue that dynamic capabilities can explain how business firms create, define, discover, and exploit entrepreneurial opportunities in complex and volatile external environments.

This happens as firms constantly and continually keep searching for matching of resources and market needs.

In contrast to the resource-based view of the firm which emphasizes on sustainable competitive advantage, the dynamic capabilities view focuses more on the issue of competitive survival in response to fast changing contemporary business conditions (Teece, 2007). According to Zahra, Sapienza, and Davidsson (2006), dynamic capabilities help in sustaining a firm's evolutionary fitness by enabling the creation, extension, and modification of its resource base, thereby creating and sustaining long-run competitive advantage and superior performance. The dynamic capabilities theory would explain how road construction companies create, define, discover, and exploit entrepreneurial opportunities in complex and volatile external environments in search for a strategic matching of resources and market needs in an attempt to win superior performance and long run success. It suggests that blanket availability of resources will not influence performance, but rather the ability to reconfigure and reorganize those resources to fit the current needs will positively impact on performance. The theory was useful to the analysis of the effect of intangible organizational resources on performance.

Empirical Literature Review

This part considers the work contained in past studies. It includes a review of the contents, methodologies, observations, and conclusions of past studies. Gaps are further highlighted along with a framework on how to fill those gaps. Okpara (2015) studied intangible resources and competitive advantage and performance of listed companies in Nigeria. The study adopted correlation and multiple regression analysis to establish the relationship between intangible resources, competitive advantage and performance. The results showed that there exist a strong relationship between intangible resources and competitive advantage as well as organizational performance. From a contextual perspective, gaps are established as most studies on the subject matter have a foreign origination leaving scanty local evidence.

Rua and França (2017) studied intangible resources and export performance for Portuguese small and medium-sized enterprises (SMEs). A descriptive survey approach was used while analysis adopted both descriptive and inferential statistics. The results indicated that intangible resources and innovation have a positive influence on export performance. Empirically, gaps are unveiled as the study focused on a narrow dimension of organizational resources (intangible resources). Contextually, gaps also emerge as most past studies have a foreign orientation leaving scanty evidence locally.

The Walter and Vincent (2018) study dwelt on the effect of organizational resources on organizational performance of state corporations in Kenya. Premised on the resource based view of the firm, the study established that intangible resources positively and significantly influence

performance. Gaps emerge as the study was narrowly founded on the resource based view of the firm bypassing other emerging schools of thought such as the dynamic capabilities theory.

Gakenia (2015) studied the effect of organizational resources on performance of mobile phone companies in Kenya. The study used a mix of both explanatory and descriptive survey research designs. The target population was made up of all the four mobile companies with active operations in Kenya. Analysis utilized both descriptive and inferential statistics. From a general perspective, results established that organizational resources was a key determinant of performance of a firm. Further, intangible resources were found to have a positive influence on performance. Gaps are clear as the study focused on only intangible organizational resources leaving out other key elements of organizational resources such as human, physical and financial resources.

RESEARCH METHODOLOGY

Research Design

A descriptive survey research design was applied in the study in order to effectively determine the organizational resources adopted by the road construction companies in Nyeri County of Kenya and their impact to performance. Gray (2019) explains that a descriptive research design portrays the nature and characteristics of phenomena as they are without any manipulation. The research design was ideal as it helped meet the objective of the study by providing insights on the relationship between intangible resources and the performance.

Target population

A target population comprises of individuals sharing the same features as outlined by the study (Mugenda & Mugenda, 2012). The target population for the current study consisted of 58 road construction companies operating in Nyeri County. The target respondents were 116 in total. They consist of project managers and project engineers working for the 58 road construction companies. The target respondents were identified through purposive or judgemental sampling as they were deemed to be well equipped with information sought. The study used a census study approach to subject all the road construction companies to the study. Hence, the study targeted one hundred and sixteen respondents comprising of project managers and project engineers.

Table 1: Target Population

Respondent Class	No Per Company	No. for All Companies	Cumulative Proportion
Project Managers	1	58	50%
Project Engineers	1	58	100%
Total Target Respondents		116	

Source: National Construction Authority (2021)

Data collection Instrument

The study gathered both primary and secondary data to determine the effect of organizational resources on performance of road construction companies in Nyeri County, Kenya. Primary data was collected using a semi structured questionnaire. Secondary data was collected using a secondary data collection checklist. The data was gathered from published reports, status reports, management reports and project reports.

Validity of the Research Instrument

Validity concerns the extent to which a research instrument measures what it is supposed to measure. Validity determines if the questionnaire measures what the study intends to investigate in order to fulfil the research objectives (Saunders, 2012). The dimensions of validity to be considered are content and construct validity. Content validity examines if the content of the research instrument comprises of what the study problem seeks to solve. Construct validity ensures that the variables are equally accessed in the questionnaire. Expert opinion method was used to improve the validity status of the instruments. The research supervisor was the expert for purposes of enhancing the validity status of the research instrument. `Improvements were made until the supervisor was satisfied that the research instrument had the capacity to provide valid and useful information towards meeting the research objectives.

Reliability of Research Instrument

According to Babbie and Mouton (2004), reliability refers to the extent to which a research instrument yields consistent results upon repeated administration. Reliability makes an assessment as to whether the research instrument gives the same outcome when administered several times. Reliability was assessed using Cronbach's Alpha Reliability Analysis. According to Della Porta and Keating (2008), if the Cronbach's Alpha reliability coefficient is greater than 0.7, then research instrument should be accepted as reliable. Contrariwise, should the coefficient be less than 0.7, then the instrument would require further improvement and would be deemed unreliable.

Data Collection Procedure

Primary data was collected through questionnaires which were administered using the drop and pick method. Drop and pick method increases the response rate as the researcher is able to convince the respondents to provide information (Kothari, 2011). The researcher made follow ups through telephone calls, emails and text messages to ensure that the respondents fill the questionnaires. The follow up was key to ensure the respondents filled the questionnaire within the set timelines.

Data Analysis and Presentation

According to Smith (2019), data analysis is a step by step process by which the researcher derives meaning from raw data so as to achieve the objectives of the study. Raw data was cleaned to eliminate inconsistencies and ensure that data has the potential to help answer the research questions. Data was then be coded into the Statistical Package for the Social Sciences (SPSS), the

software through which analysis was effected. Qualitative data was analyzed through content analysis. For analysis of quantitative data, both descriptive and inferential statistics were applied. The Pearson correlation analysis and multiple regression analysis were the key analytical models for determining the strength and direction of effect and relationship between intangible resources and performance of road construction firms in Nyeri County, Kenya. The Analysis of Variance (ANOVA) demonstrated the proportion of variation in the dependent variable (performance) influenced by the independent variables (intangible resources). The model was as follows:

$Y= \beta_0+ \beta_1 X_1 + \varepsilon$

Where, Y = Performance of road construction companies in Nyeri County, Kenya

X_1= Intangible Organisational Resources

β_0 = is the regression intercept

β_1, is the regression coefficient (gradient or slope of the regression line)

Ɛ is the error term.

RESEARCH FINDINGS AND DISCUSSIONS

This part presents the results of the analysis process.

Reliability of the Instrument and Response Rate

The research instrument was tested for reliability (consistency). Cronbach's Alpha Reliability analysis method was used to achieve this end. This section provides the output and interpretations.

Reliability of the Research Instrument

The reliability status of the research instrument is reviewed in this section. The test is done through the Cronbach's Alpha reliability analysis. Table 2 presents the reliability results.

Table 2: Cronbach's Alpha Reliability Analysis

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.759	.744	22

Source: Survey data (2023)

The Cronbach's Alpha for 22 items stood at 0.744 which represented a good level of internal consistency. An alpha coefficient that is greater or equal to 0.70 demonstrates an acceptable level of internal consistency.

Response Rate

This part covers an analysis of the response rate. Table 3 presents the summary. The evaluation is instrumental in determining the extent to which the response threshold is observed.

Table 3: Response Rate

Targeted respondents	Responses received	Response rate
116	89	76.72%

Source: Survey data (2023)

A total of 116 questionnaires were distributed to the respondents from which 89 were successfully returned. This represented a response rate of 76.72 percent. Mugenda and Mugenda (2003) sets a response rate of 50 percent as the minimum acceptable response threshold. The author further holds that a response rate of 60 percent is good and above 70 percent is excellent. Hence the response rate was excellent for purposes of the study.

Descriptive Analysis

This section presents the output of the descriptive analysis. The descriptive statistics include means and standard deviations. The statistics cover intangible organisational resources and performance of road construction companies (dependent variable) is also featured.

Intangible Organisational Resources

Intangible resources as a dimension of intangible organisational resources was assessed. Table 4 presents statistics to this regard.

Table 4: Condition of Intangible Organisational Resources

	N	Mean	Std. Dev
The firm enjoys key strategic partnerships with suppliers and thus enjoys preferential treatment in accessing materials and other services and facilities.	89	3.8956	.68564
The construction firm has been able to develop a strong corporate brand and reputation	89	3.9864	.30023
The construction firm strongly follows key values and ethics in execution of their work	89	3.8974	.50011
The construction firm enjoys knowledge of and access to superior proprietary technology of which competitors find hard to copy	89	3.9002	.33074
Average	**89**	**3.9199**	**.45418**

Source: Survey data (2023)

The average mean (3.91) shows that intangible organisational resources were largely entrenched for the road construction firms. The low average standard deviation (0.45) validates this state as it demonstrates closeness of the observations to the mean. The statistics (M=3.90, SD=0.69) indicates that the firms largely enjoyed key strategic partnerships with suppliers and thus enjoys preferential treatment in accessing materials and other services and facilities. The firms were also largely able to develop a strong corporate brand and reputation (M=3.99, SD=0.30). Further, the

statistics (M=3.90, SD=0.50) showed that the construction firms largely and strongly followed key values and ethics in execution of their work. Finally, the results (M=3.90, SD=0.33) demonstrated that construction firms largely enjoys knowledge of and access to superior proprietary technology of which competitors find hard to copy.

Performance of the Road Construction Company

Performance was evaluated through the Triple Constraints Methodology that considers Time (schedule compliance), Cost (budget compliance) and Quality (scope compliance). The results are presented in Table 5

Table 5: Performance of Road Construction Firms

	N	Mean	Std. Dev
The road construction firm has been effective and efficient in managing their finances and controlling costs associated with projects.	89	.33856	.30563
The road construction firm has succeeded in ensuring project timelines are met as spelt out through work plans.	89	.33474	.43244
The road construction company has achieved in ensuring high standards of projects implemented.	89	.46897	.05343
Average	**89**	**.38071**	**.26383**

Source: Survey data (2023)

As shown by the average mean (0.38), the performance of the road construction firms as indicated by time, cost and standards indicators was moderately good. This condition is affirmed by the average standard deviation (0.26) which shows proximity of observations to the mean. The statistics (M=0.34, SD=0.30) show that the road construction firms were only moderately effective and efficient in managing their finances and controlling costs associated with projects. In addition, the results (M=0.33, SD=0.43) show that the road construction firms had only moderately succeeded in ensuring project timelines were met as spelt out through work plans. However, the statistics (M=0.46, SD=0.53) indicated that road construction companies had also largely achieved in ensuring high standards of projects implemented.

Secondary data was also collected on the dependent variable which is performance of road construction firms in Nyeri County, Kenya. Table 6 presents statistics on cost performance of the project.

Table 6: Cost Performance; Project Cost Savings and Overruns

		Project Consumption	Budgeted Consumption	Cost Savings or Overruns	Proportion of Deviation
N	Valid	89	89	89	89
	Missing	0	0	0	0
Mean		36,002,200,864.00	28,565,324,974.00	-7,436,875,890.00	.20657
Max		56,875,675,400.00	66,675,456,060.00	-9,799,780,660.00	.17230
Min		29,800,000.00	39,900,008.00	10,100,008.00	.33892

Source: Survey data (2023)

The descriptive statistics demonstrate an unfavourable cost deviation for the road projects undertaken by the road construction companies in Nyeri County, Kenya. The mean cost overruns were 7.43 billion. On average, the road construction companies' projects posted cost overruns of 20.65 percent on average. This indicates that the cost performance of the road construction firms was not satisfactory.

Figure 1 presents a summary of the cost deviations for the road projects undertaken by the road construction firms. From the statistics, 67.31 percent of the road projects undertaken by the road construction companies experienced cost overruns. Only 32.69 percent of the projects reported cost savings.

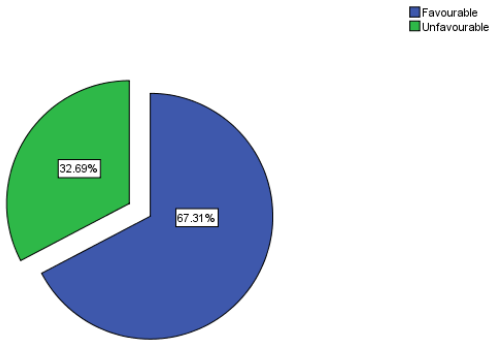

Figure 1: Nature of Budget Deviation
Source: Survey data (2023)

Table 7 shows presents statistics on schedule (time) performance of the road construction projects undertaken by the road construction firms.

Table 7: Time Performance; Time savings or Overruns

		Budgeted Time for the project in Months	Total Time Taken for the project in months	Time Savings Or Overruns
N	Valid	89	89	89
	Missing	0	0	0
Mean		11.6783	19.0001	-7.3218
Minimum		7.00	9.00	2.00
Maximum		19.00	29.00	-10.00
Sum		580.1052	757.3685	-197.2633

Source: Survey data (2023)

As observed from the output, the schedule performance of the road construction projects undertaken by road construction companies was not good. On average, the projects posted schedule overruns of up to approximately 8 months. This showed that road projects in Nyeri County were hardly completed within the planned schedules.

Figure 2 presents a summary of the nature of cost deviations. A whopping 53.85 percent of road construction projects by the road companies in Nyeri county posted unfavourable schedule deviations (overruns). The least class representing 46.15 percent of the road construction projects reported favourable schedule deviation (time savings).

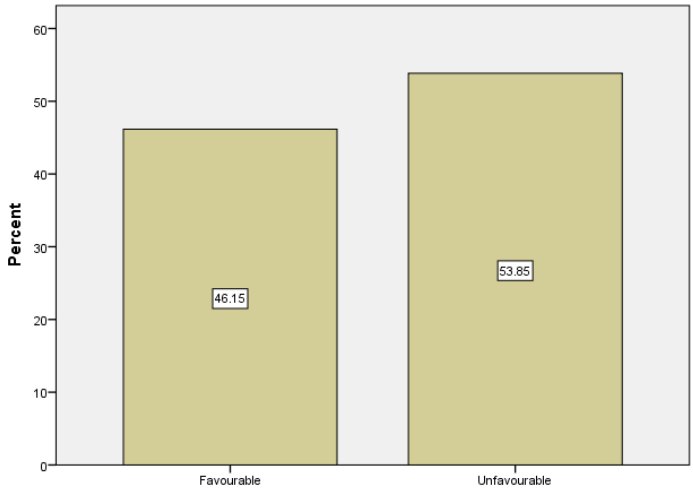

Figure 2: Nature of Schedule Deviation
Source: Survey data (2023)

Inferential Analysis

The inferential statistics were instrumental in guiding the inferences or generalisations to the entire population. The inferential statistics featured are the multiple regression analysis and the Pearson correlation analysis. The statistics were key in answering the research questions and meeting the objectives of the study.

Pearson Correlation Analysis

The Pearson Correlation analysis helped in determining the relationship between intangible resources and performance of road construction projects in Nyeri County, Kenya. Table 8 presents the output to this effect.

Table 8: Pearson Correlation Analysis

		Performance of Road Construction Companies
Intangible Resources	Pearson Correlation	.851**
	Sig. (2-tailed)	.012
	N	89

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Survey data (2023)

The Pearson correlation analysis output showed that intangible organisational resources has a positive and statistically significant relationship with performance of road construction companies. Intangible resources has a Pearson correlation coefficient of 0.851 which demonstrates a very strong and positive relationship with performance of road construction companies. The relationship is statistically significant since the p-value (0.012) is below the 5% significance level. The results agree with past studies such as Okpara (2015), Rua and França (2017), Walter and Vincent (2018) and Gakenia (2015) who indicated that intangible resources have a positive relationship with performance.

Multiple Regression Analysis

The multiple regression analysis was a key tool in effectively answering the research question on intangible organisational resources and performance of road construction companies. The regression analysis is useful in determining the individual strength and direction of effect the intangible organisational resources on performance of road construction projects in Nyeri County, Kenya.

The Coefficients output of the multiple regression analysis demonstrates the magnitude of effect of intangible organisational resource on performance. Table 9 shows the coefficients of the multiple linear regression

Table 9: Coefficients

	Unstandardized Coefficients		Standardized Coefficients		
Model	B	Std. Error	Beta	T	Sig.
1(Constant)	3.096	.232	2.654	13.345	.003
Intangible Resources	.634	.199	.607	3.186	.001

a. Dependent Variable: Performance of Road Construction Companies

Source: Survey data (2023)

The multiple regression analysis output provides evidence that intangible resources is a useful and positive determinant of performance of road construction firms. The regression model is developed as:

$Y_{ij}= 3.096+ 0.634X_1 + \varepsilon$
Where, Y_{ij} =Performance of Road Construction Companies
X_1 = Intangible Organisational Resources
β_0 = is the regression intercept
β_1=regression gradient
Ɛ is the error term.

The coefficient for intangible organisational resources (0.634) has an associated p–value of 0.001 which is within the 5% level of significance. As such, intangible organisational resources have a statistically significant effect on performance of road construction companies. To that end, a unit increase in intangible organisational resources would result to a 0.634 unit improvement in performance of road construction firms. The results agree with past studies such as Okpara (2015), Rua and França (2017), Walter and Vincent (2018) and Gakenia (2015) who indicated that intangible organisational resources positively and significantly influence performance.

Conclusions, Recommendations and Contribution to Knowledge

The performance of the road construction firms as indicated by time, cost and standards indicators was moderately good. While the standards performance scored a high performance figure, the same could not be established with cost and schedule indicators. The road construction firms were moderately effective and efficient in managing their finances and controlling costs associated with projects. In addition, the road construction firms had only moderately succeeded in ensuring project timelines were met as spelt out through work plans.

Multiple regression analysis results indicated that intangible organisational resources have a statistically significant effect on performance of road construction companies. The Pearson Correlation analysis indicated that intangible resources has a very strong and positive relationship with performance of road construction companies. The road construction companies enjoyed a rich endowment with intangible resources. The firms largely enjoyed key strategic partnerships with suppliers and thus enjoyed preferential treatment in accessing materials and other services and facilities. The firms were also largely able to develop a strong corporate brand and reputation. Further, the construction firms largely and strongly followed key values and ethics in execution of their work. Finally, the construction firms largely enjoyed knowledge of and access to superior proprietary technology which competitors found hard to copy.

In view of the data analysis results, the study made key conclusions regarding intangible organisational resources and performance of road construction companies. The conclusions are anchored on the inferential statistics which allow generalisations to the entire population. On performance, a conclusion was made that the performance of the road construction firms as indicated by time, cost and standards indicators was just moderate. Further, it was concluded that

only the standards performance dimension was satisfactory while the cost and schedule scores were unfavourable. Multiple regression analysis informed a conclusion that intangible resources have a statistically significant effect on performance of road construction companies. Further, a conclusion is made that a unit increase in intangible resources would result to a 0.634 unit improvement in performance of road construction firms. Although the road construction companies enjoyed a rich endowment with intangible resources, there was need to further cultivate strategic partnerships with suppliers to enjoy enhanced preferential treatment in accessing materials and other services and facilities. The study recommends heightened investment in intangible assets of the road construction firms. The study recommends involvement in corporate social responsibilities, strengthening of the ethical work codes and standing out as the best quality road constructers. The road construction firms should also identify and nurture a culture of creativity and innovation.

The study makes significant contribution to expansion of strategic management as a discipline. In particular, the study develops the strategic management practice and theory by making major contributions to knowledge of the subject matter; intangible organizational resources and performance. While past studies have over concentrated on profitability and market based ratios, the current study uses indicators that best fit the construction context. The use of the Triple Constraints Methodology that considers Time (schedule compliance), Cost (budget compliance) and Quality (scope compliance) brings new dimensions to the strategic management discipline in a construction firm context. The study therefore provides largely original and indispensable empirical evidence to guide decision making on intangible resources and performance in the construction industry or other firms dealing with projects as their business line. The study underlines the importance of intangible resources as held by resource based view and dynamic capabilities theorists.

REFERENCES

Abyad, A. (2018). Project management, motivation theories and process management. *Middle East Journal of Business, 13*(4), 18–22.

Al-Ghattas, H., & Marjanovic, O. (2021). Business Analytics Capabilities for Organisational Resilience. *Proceedings of the 54th Hawaii International Conference on System Sciences*, 228.

Ambrosini, V., Bowman, C., & Collier, N. (2009). Dynamic capabilities: An exploration of how firms renew their resource base. *British Journal of Management*, *20*(s1), S9–S24.

Armstrong, M. (2021). *Performance management*.

Babbie, E., & Mouton, J. (2004). The practice of social research. 2007. *London: Thomson Wadsworth*.

Banerjee, A., Duflo, E., & Qian, N. (2012). *On the road: Access to transportation infrastructure and economic growth in China*. National Bureau of Economic Research. http://www.nber.org

Barney, J. B. (2001). Resource-based theories of competitive advantage: A ten-year retrospective on the resource-based view. *Journal of Management*, *27*(6), 643–650.

Barney, J., Wright, M., & Ketchen, D. J. (2001). The resource-based view of the firm: Ten years after 1991. *Journal of Management*, *27*(6), 625–641.

Brandon Jr, D. M. (2010). Project performance measurement. *The Wiley Guide to Project Control*, *9*, 75.

Cohen, J. A. (2011). *Intangible assets: Valuation and economic benefit* (Vol. 273). John Wiley & Sons. https://books.google.com

Della Porta, D., & Keating, M. (2008). *Approaches and methodologies in the social sciences: A pluralist perspective*. Cambridge University Press.

Demurger, S. (2001). Infrastructure development and economic growth: An explanation for regional disparities in China? *Journal of Comparative Economics*, *29*(1), 95–117.

Dublin. (2021). *South Africa Construction Industry Report 2020: Industry Performance, COVID-19 Impact, Influencing Factors, Industry Associations*. https://finance.yahoo.com

Eisenhardt, K. M., & Martin, J. A. (2000). Dynamic capabilities: What are they? *Strategic Management Journal*, *21*(10–11), 1105–1121.

Freeman, R. E. (2010). *Strategic management: A stakeholder approach*. Cambridge university press. https://books.google.com

Gakenia, N. J. (2015). Organizational resources and performance of mobile phone companies in Kenya. *Unpublished PhD Thesis*.

Gray, D. E. (2019). *Doing research in the business world*. Sage Publications Limited.

Gyadu, W., Danso, H., & Asubonteng, J. A. (2013). Assessment of the Performance of Local and Foreign Road Construction Firms in Ghana. *International Journal of Construction Management*, *13*, 53–73.

Hasan, R. U., & Chyi, T. M. (2017). Practical application of Balanced Scorecard-A literature review. *Journal of Strategy and Performance Management*, *5*(3), 87.

Helmold, M., & Samara, W. (2019). *Progress in Performance Management: Industry Insights and Case Studies on Principles, Application Tools, and Practice*. Springer.

Horta, I. M., Camanho, A. S., Johnes, J., & Johnes, G. (2013). Performance trends in the construction industry worldwide: An overview of the turn of the century. *Journal of Productivity Analysis*, *39*(1), 89–99. https://doi.org

Jancenelle, V. E. (2021). Tangible- Intangible resource composition and firm success. *Technovation*, *108*, 102337.

Josiah, C. (2019). *Factors Affecting Triple Constraints in Project Management Success* [PhD Thesis]. The Open University of Tanzania.

Lockett, A., Thompson, S., & Morgenstern, U. (2009). The development of the resource-based view of the firm: A critical appraisal. *International Journal of Management Reviews*, *11*(1), 9–28.

Lorimer, B. A. (2019). *Sustainable construction industry strategies in South Africa: Specialization vs Diversification*. Faculty of Engineering and the Built Environment.

Mohsenijam, A., Mahdavian, A., & Shojaei, A. (2020). Constructability Concepts, Significance, and Implementation. *Construction Research Congress 2020: Project Management and Controls, Materials, and Contracts*, 475–484.

Mugambi, A. M. (2010). *Roads Infrastructure Investment and Economic Growth in Kenya: The Role of Private and Public Sectors*.

Mugenda, O. M., & Mugenda, A. G. (2003). Research methods. *Nairobi: ACTS*.

Mugenda, O. M., & Mugenda, A. G. (2012). Research methods dictionary. *Nairobi, Kenya: Applied Research & Training Services*.

Mwelu, N., Davis, P. R., Ke, Y., Watundu, S., & Jefferies, M. (2021). Success factors for implementing Uganda's public road construction projects. *International Journal of Construction Management*, *21*(6), 598–614.

Njagi, E., Muathe, S., & Muchemi, A. (2018). Financial Resources, Physical Resources and Performance of Public Health Institutions in Embu County, Kenya. *European Journal of Business and Management*, *10*(8), Article 8.

Nørreklit, H., Kure, N., & Trenca, M. (2018). Balanced scorecard. *The International Encyclopedia of Strategic Communication*, 1–6.

Office of the Auditor General. (2019). *Report of the Auditor-General on the Financial Statements of Kenya Rural Roads Authority for the year ended 30 June 2017* (No. 2–2017). Office of the Auditor General.

Okpara, J. O. (2015). Exploring the effects of intangible resources on competitive advantage and performance of listed firms in Nigeria. *Business and Applied Sciences Academy of North America*, *8*.

Ong`ondo, C. B., & Masu, A. O. G. and S. (2019). *Appraising the Performance of Construction Projects during Implementation in Kenya, 1963-2018: A Literature Review Perspective*. 1–24. https://doi.org

Otulia, P. O., Mbeche, P. I. M., Wainaina, P. G., & Njihia, J. (2017). Influence of Organisational Resources on Performance of ISO Certified Organisations in Kenya. *European Scientific Journal*.

Peltokorpi, A., Seppänen, O., Lehtovaara, J., Pikas, E., & Alhava, O. (2021). Developing a framework for systemic transformation of the construction industry. *Proc. 29th Annual Conference of the International Group for Lean Construction (IGLC29)*, 454–463.

Penrose, E. (1959). Contributions to the resource-based view of strategic management. *Journal of Management Studies*, *41*(1), 183–191.

Peteraf, M. A., & Bergen, M. E. (2003). Scanning dynamic competitive landscapes: A market-based and resource-based framework. *Strategic Management Journal*, *24*(10), 1027–1041.

Raffoni, A., Visani, F., Bartolini, M., & Silvi, R. (2018). Business performance analytics: Exploring the potential for performance management systems. *Production Planning & Control*, *29*(1), 51–67.

Rua, O. L., & França, A. (2017). The linkage between intangible resources and export performance: The mediating effect of innovation. *International Journal of Innovation*, *5*(3), 399–410.

Saunders, M. N. (2012). Choosing research participants. *Qualitative Organizational Research: Core Methods and Current Challenges*, 35–52.

Smith, M. (2019). *Research methods in accounting*. SAGE Publications Limited.

Teece, D. J., Pisano, G., Shuen, A., & others. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, *18*(7), 509–533.

Van Wyngaard, C. J., Pretorius, J.-H. C., & Pretorius, L. (2012). Theory of the triple constraint—A conceptual review. *2012 IEEE International Conference on Industrial Engineering and Engineering Management*, 1991–1997.

Walter, J. O., & Vincent, N. M. (2018). *Organizational Resources and Performance of Kenyan State Corporations*.

Wheelen, T. L., & Hunger, J. D. (2011). *Concepts in strategic management and business policy*. Pearson Education India.

Ying, F., Tookey, J., & Seadon, J. (2018). Measuring the invisible: A key performance indicator for managing construction logistics performance. *Benchmarking: An International Journal*.

Zahra, S. A., Sapienza, H. J., & Davidsson, P. (2006). Entrepreneurship and dynamic capabilities: A review, model and research agenda*. *Journal of Management Studies*, *43*(4), 917–955.