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IMPACT OF COVID-19 ON THE CONSTRUCTION INDUSTRY PERFORMANCE; A CASE OF CONTRACTORS IN KENYA

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1. Background

- **30 January 2020:** WHO declared Coronavirus Disease (COVID-19) a **global health emergency**
- **11 March 2020:** WHO officially declared COVID-19 a **pandemic**
- **13 March 2020:** Kenya confirms the **first case** of COVID-19 from a traveller who had arrived from London
- **15 March 2020:** President directs first measures
  - ✓ Government of **Kenya has continued to announce bold measures** to contain the spread of the virus (reviewed from time to time).
  - ✓ The construction sector in Kenya became **adversely affected** by the COVID-19 outbreak – this has impacted growth across key sectors over short to medium term and recovery is expected to be slow
  - ✓ The pandemic is **aggravated some already existing weaknesses and vulnerabilities** in many sectors, especially the construction industry.
  - ✓ With almost each **task relying on inputs from another country,** strict lockdowns across borders brought sectors to a standstill

1. Background …ctd

- **Examples of Measures:** ban on **social gatherings, declaration of curfews, restrictions** on in-country travel, and encouragement of **work from home** practices while **reinforcing other preventive measures** - these actions had adverse ripple effects, with some construction companies being forced to **send staff on unpaid leave or to lower wages**
- These unprecedented restrictions generally **affected performance** in the construction industry eco-system
- **Impacts:** on individual **construction workers, professionals, construction projects, construction companies, and corporate institutions**,
- **Outcome: Chain reactions** on the **different interconnected critical areas** such as **supply chain, workforce, and finance**

2. Problem Statement

- Kenya's **construction sector** remains a **significant component of the country's immediate and longer-term economic growth agenda**
- The **restrictions** caused by government mitigation measures have **constrained the production of materials, movement of cargo, and mobility of workers** with a consequence of **disrupting the supply** and **distribution chains**.
- It is therefore **difficult for existing and new projects to access the required materials, equipment and workforce.**
- **As a result** of the country's financial recession, the **construction sector has experienced accelerating trends in unemployment,** which has put a further strain on **wages and income levels.**

3. Literature Review

1. Finance

- **According to Biswas et al. (2021),** construction companies are **not making any significant profit due to the suspension of work**, leading to losses for both companies and suppliers.
- **Zamani, Rahman, Fauzi & Yusof (2021)** identified **three factors** that mainly **caused financial problems** during COVID-19 in Malaysia as; late payment, project cost increase, and reduced number and scope of projects. Late project payments were experienced because payment claims were delayed due to government restrictions during the movement control order.
- **Changes in foreign exchange rates** and **increased demand** for supplies also saw the **cost of materials increase** hence escalating the project costs.
- **New projects** were also reduced because of the limited award of new tenders and contracts competitiveness in the face of uncertainty.

3. Literature Review …ctd

2. Workforce

- COVID-19 has had far-reaching **impacts on labor market** outcomes.
- **Beyond** the urgent concerns about the health of workers and their families, the virus and the subsequent economic shocks have **impacted the world of work across three key dimensions:** the number of jobs (both unemployment and underemployment); the quality of work (e.g. wages and access to social protection); and effects on specific groups who are more vulnerable to adverse labor market outcomes (ILO, 2020).
- According to the **KNBS survey (2020),** the Kenyan construction industry **employs 222,000** people. The **direct impact** of COVID-19 in the sector, just like in other global jurisdictions, has been **reducing the labor force as the construction sites adhered to guidelines** requiring workers to those to keep sufficient physical distance apart (Karanja, 2020).

3. Literature Review …ctd

3. Supply Chain

- **KMPG & KAM survey report (2020)** on the impact of Covid-19 on the manufacturing sector in Kenya indicates that in regards to logistics, **76%** of the respondents experienced **challenges in locally sourcing or shipping in of raw materials,** while **77%** recorded an **increase in the cost of procuring imported raw materials** due to **government restrictions** imposed on the countries where the raw materials were being sourced from and other added challenges such as seeking **credit insurance covers** from banks, **depreciation of the Kenya Shilling, and suppliers invoking the force majeure clauses** in their contracts. AAK (2020) affirms that indeed there had been stoppage, delays or suspension of some ongoing construction works.
- Businesses resorted to **looking for alternative** sources of raw materials to replenish their stock, which proved to be more expensive
- **Exporters** were not spared, with **57%** strongly agreeing that they **faced difficulties in exporting** with **limited cargo capacity and increased cost of air freight.**

4. Methodology

Research Design

- A **cross-sectional survey design** involving **looking at data from a population at one specific time** was employed to capture information on the impacts of the pandemic. **Data collection was carried out in March 2021,** a year after the onset of COVID-19 and **when the country was experiencing the third wave of the pandemic.**

Population and Sample

- The **target population** in this case was the **912 Contractors** in Kenya in the **FY 2020/2021** as per the NCA registration database.
- **Simple random sampling** method was used to select **300 contractors** to participate as respondents

4. Methodology …ctd

Data Collection:

- The study employed **questionnaires containing open-ended questions** and **multiple-choice questions.**
- The **impacts** were **measured using nominal scale, 0–5 point ordinal scale**, and ratio scales, to capture both **quantitative and qualitative information**, where 0 means not affected, and 5 means extremely affected.

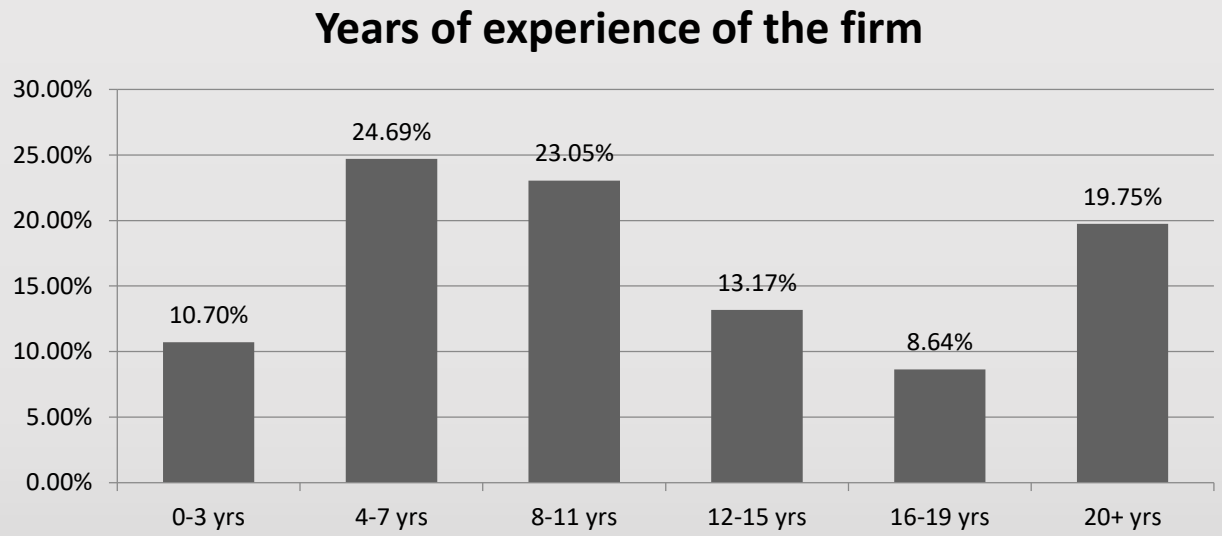
Data analysis and Presentation:

- Both **graphs and frequency tables** were used to display the output. **Descriptive statistics** such as mean, standard deviation and frequencies were also used to interpret the information.
- **Inferential statistics** was obtained using **factor analysis** to understand the underlying factors that explain the correlation pattern among the impacts.

5. Findings

Response Rate

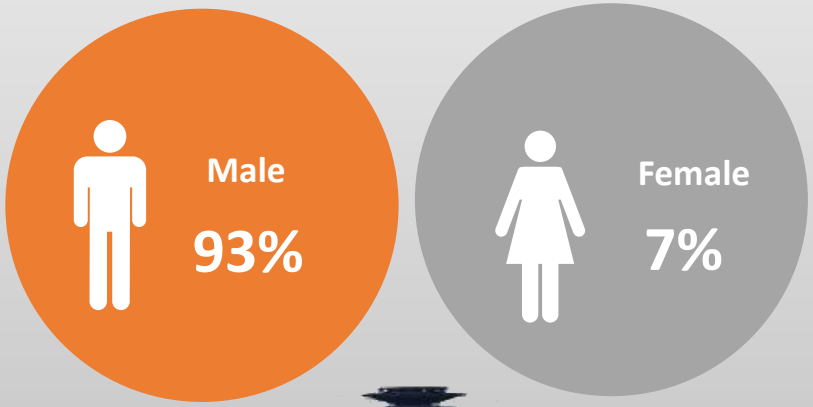
81.67%



A majority constituting **24.69%**, had 4 to 7 years of experience in the construction industry, while the minority, 8.64%, had 16 to 19 years of experience

Gender

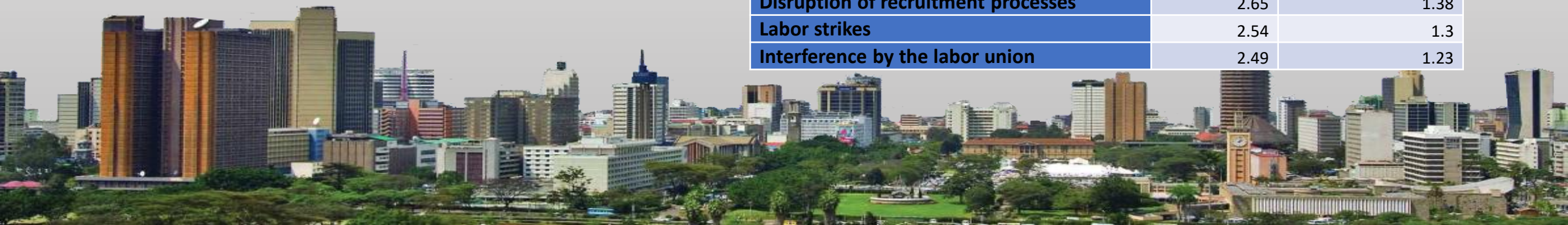
93.47% of the respondents were male, and 6.53% were female. This is a clear indication that the male gender highly dominates the construction industry in Kenya.



5. Findings …ctd

In essence, **factors with mean values of three and above were considered the most felt impacts,** while those who recorded mean values of less than three were minor concerns.

Impacts of COVID-19 (scale of measurement = 0-5)	Mean	Standard deviation
High cost of materials	3.72	1.13
Disruptions in cash flow	3.61	1.28
Delays in payment	3.60	1.27
Challenges in accessing credit facilities	3.55	1.30
Increased project cost	3.53	1.19
Increased rates of taxation	3.47	1.28
Disruption of transport systems	3.40	1.22
Increased exchange rates	3.36	1.29
Increased overhead cost	3.35	1.22
Delays in the acquisition of approval/permits	3.18	1.31
Unavailability of outsourced labor	3.09	1.24
Delays in delivery	3.08	1.21
Shortage of materials	3.07	1.32
Increased time in acquisition/delivery of materials	3.00	1.25
High absenteeism of labor	2.97	1.29
Unavailability of supplies	2.96	1.33
Increased project claims	2.95	1.31
Cancellation of supplies	2.88	1.31
Unavailability of labor	2.79	1.25
Lack of access to equipment	2.69	1.27
Disruption of recruitment processes	2.65	1.38
Labor strikes	2.54	1.3
Interference by the labor union	2.49	1.23



5. Findings …ctd

- **Factor analysis** was conducted to identify **underlying factors** that explain the **correlation pattern within a set of observed variables,** which in this study are the impacts of the COVID-19 pandemic.
- **From the 23 factors**, **three** components were extracted that can provide meaningful correlation amongst impacts of COVID-19 pandemic and were reliable for factor analysis. Higher factor loadings indicate a higher factor's contribution to the component.
- **All the factor loadings were greater than 0.5,** which is considered the threshold by many researchers. In essence, factor loadings greater than 0.5 **show that the factor can significantly interpret the component**

5. Findings …ctd

Factor	Name	Impacts of COVID-19	Factor Loadings
Factor 1	Supply Chain Effects	Increased time in acquisition/delivery of materials	0.7231
		Delays in delivery	0.7209
		Unavailability of supplies	0.6976
		Disruption of transport systems	0.6950
		Shortage of materials	0.6941
		Cancellation of supplies	0.6406
		Lack of access to equipment	0.6399
		Unavailability of labor	0.6044
		Delays in the acquisition of approval/permits	0.5160
Factor 2	Financial Effects	High cost of materials	0.6337
		Increased rates of taxation	0.6291
		Increased project cost	0.6153
		Challenges in accessing credit facilities	0.5854
		Increased overhead cost	0.5737
		Increased project claims	0.5466
		Increased exchange rates	0.5444
		Delays in payment	0.5278
		Disruptions in cash-flow	0.5276
Factor 3	Workforce Effects	Labor strikes	0.7145
		Interference by the labor union	0.6963
		Disruption of recruitment processes	0.6939
		Unavailability of outsourced labor	0.5805
		High absenteeism of labor	0.5206

5. Findings …ctd

- **Factor 1** consisted of **9 surrogates:** Increase time in acquisition/delivery of materials; Increased overhead cost; Unavailability of supplies; Disruption of transport systems; Shortage of materials; Cancellation of supplies; Lack of access to equipment; Unavailability of labor and Delays in the acquisition of approval/permits. Since these surrogates were impacts related to the issues of supplies, this factor was named supply **chain effects.**
- **Factor 2** consisted of **9 surrogates:** High cost of materials; increased rates of taxation; increased project cost; Challenges in accessing credit facilities; increased overhead cost; increased project claims; increased exchange rates; Delays in payment, and Disruptions in cash flow. Since these surrogates were impacts related to financial issues, this factor was named **financial effects**.

5. Findings …ctd

- **Factor 3** consisted of **5 surrogates:** Labor strikes; Interference by labor unions; Disruption of recruitment processes; Unavailability of outsourced labor, and High absenteeism of labor. These surrogates were impacts related to labor; hence this factor was named **workforce effects.**
- **The three factors were ranked** using mean values to ascertain the weight of impact of COVID-19 on each factor. **Supply chain effects** had the highest mean value of **59.4. Financial effects** came second with a mean value of **52.42,** followed by **workforce effects** with a mean value of **39.58**

6. Conclusion

- **Contributes** to the ongoing discourse on the impacts of COVID-19 on the construction industry by awakening the curiosity on the most felt consequences of the crisis.
- The findings **reveal that supply chain, finance, and workforce** have been hit by the pandemic significantly in different ways. (Impacted supply chain factors: disruption of the transport system, delays in the acquisition of approvals/permits, delays in delivery, shortage of materials, and increased time in acquisition/delivery of materials; finance: the high cost of materials, disruption in cash flow, delays in payment, challenges in accessing credit facilities, increased project cost, increased rate of taxation, increased exchange rates, and increased overhead cost; workforce: the unavailability of outsourced labor and the high labor absenteeism).
- The **construction industry has also been highly impacted by project suspensions (32%) and projects termination (16%), layoff of workers (36.77%),** and an average financial loss of 30.81% incurred by contractors.
- These impacts are irrefutably dangerous to maintain in the progress of the construction projects.

7. Recommendations

- The findings of this paper should **serve as a practical and significant guide for the construction industry stakeholders** and policymakers to realize the impacts of unforeseen pandemics on the construction industry and, more specifically, **plan for continuity** through the institution of the necessary safeguards.
- This will help **enhance coping strategies towards unexpected circumstances** in the construction industry.

7. Recommendations …ctd

- **Contractors should:**
  - Adopt the concept of risk planning to mitigate impacts of unforeseen events
  - Have cash reserves to deal with initial shocks of pandemic
  - workers should be sensitized on safety and precautions
  - Establishment of proper guidelines on flexible working model
- **The government(s), on the other hand, should:**
  - Standardize the cost of materials
  - Undertake Training/advocacy for contractors
  - Incentivize production of local materials and technologies
  - Provide financial scheme to support contractors
  - Encourage adoption of technology and innovation

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